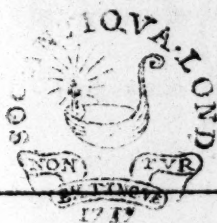


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VAN SWIETEN'S
COMMENTARIES
ABRIDGED.

By RALPH SCHOMBERG, M.D.

Fellow of the Society of ANTIQUARIES.



VOL. III.

Quidquid præcipies, esto brevis ; ut cito dicta
Percipiant animi dociles, teneantque fideles.

HORAT. de Arte Poeticâ.

L O N D O N,
Printed for E. JOHNSTON, in LUDGATE-STREET.
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WILLIAM WATSON
PRESIDENT, ELECTS, CENSORS, FELLOWS

COMMITTEE

MEMBERS OF THE ROYAL COLLEGE OF

PHYSICIANS OF LONDON

THIS ABRIDGMENT

IS VERY RESPECTFULLY INSCRIBED

AS A TESTIMONY

OF THE MOST PLEASING CONVERSATION

FOR THAT FRANK AND OPEN

AS WELL AS

OF THE SINCEREST REGARD

FOR MANY OF ITS ENTHUSIASTS

BY THEIR OBEDIENT

AND VERY HUMBLE SERVANTS

RALPH SCHOMBERG

BATH
JULY 22, 1774

TO THE
PRESIDENT, ELECTS, CENSORS, FELLOWS,

A N D

MEMBERS OF THE ROYAL COLLEGE OF
PHYSICIANS OF LONDON,

T H I S A B R I D G M E N T

I S V E R Y R E S P E C T F U L L Y I N S C R I B E D ,

A S A T E S T I M O N Y ,

O F T H E M O S T P R O F O U N D V E N E R A T I O N

F O R T H A T L E A R N E D B O D Y I N G E N E R A L ,

A S W E L L A S

O F T H E S I N C E R E S T R E G A R D

F O R M A N Y O F I T S I N D I V I D U A L S ,

B Y T H E I R O B E D I E N T ,

A N D V E R Y H U M B L E S E R V A N T ,

BATH,
JULY 22, 1774.

RALPH SCHOMBERG.

PREFACE.

THE third and fourth Volumes of the Abbridgement are now offered to the Public. That the learned Commentator should, in the opinion of the various and experienced of the most able and eminent writers, and of the best and most unquestionable authority, pronounce sentence against the doctrine, as I confess, very strange; his reasons, with submission to his disingenuous character, are far, in my

P R E F A C E.

THE third and fourth Volumes of the *Abridgment* are now offered to the Public.

THAT the learned COMMENTATOR should, in flat contradiction to the *opinion* and *experience* of the most able and eminent writers, and of the best and most unquestionable authority, pronounce sentence against INOCULATION, is, I confess, very strange: his reasons, with submission to so distinguished a character, are far, in
my

my humble apprehension, from being either conclusive or satisfactory. The uncontrovertible success, which has ever attended this practice since its first introduction into these *kingdoms*, as well as into every other part of *Europe* and *America*, where it has been most universally received, to the best of my information, has so established it into reputation as no perverse sophistry or superstitious notions can controvert. Yet such is the prevailing and baneful influence of *prejudice*, that it will frequently rob men of the soundest understanding of their judgment ; it will blind the eye of the most clear sighted philosopher, and involve him in doubts

doubts and difficulties, and undetermined conclusions — the *ignis fatuus* leads him into labyrinths — and he is lost, because he will not think for himself, or be convinced by self-evident demonstration.

Upon my perusal of the first and second Volumes after their publication, I found many useful and judicious observations had been omitted, which well deserved to be taken notice of — these I have therefore thrown together, by way of addenda, into the fourth Volume.

I have endeavoured to contract, in as small a compass as the nature of the work would admit, what VAN SWIETEN, with immense reading and indefatigable

gable industry, has drawn out in full length — ; I meant to preserve the likeness, and I hope I have not failed in the design — but this must now be left to the candid determination of the judicious reader.

I have, however, myself had the satisfaction to receive much pleasure, as well as benefit, in the execution; as it reminded me of many *opinions* and *passages* which a very long absence from academical studies had almost obliterated.

Of

Of the SMALL-POX.

THE most celebrated physicians have differed in their opinions concerning the antiquity of this disease; some pretending to have met with passages in HIPPOCRATES, AETIUS, and other writers to confirm their assertions; others again have as flatly denied it. The ingenious and learned Doctors HAHN and WERLHOF warmly, and with much erudition, disputed this point, but as gentlemen of liberal sentiments, without spleen or acrimony on either side.

I confess, that when I first engaged in the study of physic, I read the Greek and antient physic-writers with the closest attention, and carefully noted down every remarkable passage which could conduct me to the faithful knowledge and cure of diseases; these I digested under such proper heads,

as that I might, as it were, with one view, easily recur to them upon every occasion — and I cannot say (however some things might have slipped my notice) I think it sufficiently evident that the SMALL-POX was known to the antients; it is scarcely credible that they who were so nicely exact in their description of diseases, should have been so remiss in their account of *this* — more especially HIPPOCRATES, who stands foremost in the list of physical writers, for his surprizing sagacity, and for his investigation of diseases throughout all their stages; it is true, he studied brevity and perspicuity, but his commentator GALEN was more diffusive and prolix; we can, notwithstanding, find no one observation in all their works, which can determine us to suppose they knew any thing of the *Small-Pox*.

RHAZES was the first *Arabian physician* (he flourished about the year of CHRIST 1070) who gives a distinct and accurate account of the *Small-Pox*, though he acknowledges himself a *compiler only* of the writings

writings of the antient Arabian authors, whose works have not been handed down to us, or remain locked up as manuscripts in some libraries, concealed from publick perusal. Certain it is, the *Small-Pox* spread its contagion with the *Makometan* arms to places where it had never been known. — The *Christians*, in their holy wars with the *Saracens*, brought it into *Europe*. And it was manifestly known by every old woman in *ENGLAND*, so far back as in the 13th century. — *The SMALL-POX never quits the residence it once has gotten possession of.* —

The great *SYDENHAM*, with a spirit the most daring, as well as the most happy, withstood the torrent of mischief which prevailed in his times, in his opposition to the *hot regimen* which was universally inculcated and recommended; and in pursuing a quite contrary method, which has ever since been successfully adopted by all honest and able physicians.

To put a stop to the progress of this disease, (or rather to render it less malignant) which sooner or later attacks the

greatest part of mankind; physicians and others set about to contrive how this infection might be communicated, so as to have more favourable consequences; this it was originally gave rise to INOCULATION, and afforded new hints as well as useful observations, by which we are taught to illustrate the nature and genius of *the disease*, as well as to point out many interesting methods towards its cure; all which will be particularly attended to in this chapter. SYDENHAM observes that the *Small-Pox*, in those years it is *epidemic*, usually begins about the *vernal equinox*, and, spreading daily, becomes *epidemic* about *autumn*, after which its violence abates, by degrees, upon the approach of *winter*; it increased a third time on the return of the *spring*, but not with so much severity, nor so generally as it had done the *summer* before; and, in August 1669 it entirely disappeared, and was succeeded by an epidemic *dysentery*; but in those years where it is not only *epidemic* but *irregular*, likewise of a more dangerous kind, it sometimes appears sooner,

Of the Small-Pox.

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sooner, viz. in the month of January. These observations I have myself had frequent opportunities to justify by my own extensive practice; sometimes indeed it has been different; I attended several patients in the *Small-Pox* in the months of November and December 1739, which were distinct and regular, and of which very few died, though this *epidemic constitution* began not about the *vernal equinox*, but much sooner, even in the very *winter* season.

Physicians, conversant in practice, must know how different the same disease will be found under different *epidemic constitutions*; this has been very judiciously noted by SYDENHAM, who says the *Small-pox*, in the years 1667, 1668, and part of the year 1669, were *epidemic* though *regular*, and yet, in the years 1674 and 1675, were *anomalous*, and entirely unlike the former.

A careful attention to every occurrence in *epidemic diseases*, with regard to *time*, *duration*, *symptoms*, whether *salutary* or *fatal*, and then to compare these remarks with

the same disorder whenever it makes its appearance some years after, will be found of most infinite use and consequence: this it is which will undoubtedly distinguish the able and accurate from the illiterate and inattentive physician.

In those *epidemic constitutions* which have fallen under my notice, I have observed the number of patients to increase during the height of the *spring*, still more and more in the *summer* months, attended at the same time with a greater degree of danger, more especially in the month of September, when the preceding *summer* had been intensely hot; the *Small-Pox*, and its virulence visibly decreased in October, and more so in the succeeding months. SYDENHAM says the worst and most dangerous sort always succeeded the very hot *springs* and *summers*. He assures us that in the years 1667, &c. they became milder towards the *winter*. And yet in *France* it was observed that in the year 1666 more people died of the *Small-Pox*, and that they raged with greater fury in the sharp *winter*, than they had

had done in the very heat of *summer*. This proves that we are not always to be determined by general rules, which sometimes admit of exceptions.

It is universally agreed, that the *spring* and *autumn* are the most favourable seasons, and for very obvious and uncontrovertible reasons.

It has been a disputable point among physicians, whether the *Small-Pox* attacked us more than once. *Forestus*, *Dobrenzky*, *Diemerbroeck*, and others have affirmed it: I confess the opinion of *Diemerbroeck* seems to carry more weight with it than the rest, and yet I am inclined to believe he mistook the *spurious* for the *real Small-Pox*, for he says, "*Multis post primum aut secundum, sed pluribus non ante tertium, quartum, vel quintum diem, variolæ prodibant. Quibus tardius apparebant illi periclitabantur, multique moriebantur.*" Now we know, from the authority of SYDENHAM and other medical writers, and from our own daily experience, that the genuine *Small-Pox* are by far more dangerous, *cæteris paribus*,

the sooner they make their appearance : have we not for that reason room to suspect, that the eruptions which appeared on the first or second day unattended with danger, were of the spurious kind, and those which came out later, the truly genuine ? especially when he says — “ *paulo post in idem malum (variolas scilicet) reciderunt, atque illis ista secunda vice sæpe multo majori copia eruperunt quam prima.*” The very learned Dr. MEAD confutes this opinion, “ *Nemo mortalium quemquam hoc periculum bis unquam subire posse, vel minimam suspicionem fovere debet;*” and in another place, “ *experientia compertum esse, nunquam iterum reverti posse variolas;*” and if the testimony of thirty years full and extensive practice may be admitted, I declare I never saw any one person who ever had the *Small-Pox* a second time.

This disease brings on such a spissitude of the blood as is observed in highly inflammatory disorders, which rather increases than diminishes through the whole course of it ; witness the *ophthalmics*, *boils*, &c. which succeed; excepting where, in
the

the very worst sort, the whole *crasis* of the blood and almost all the other humors of the body are entirely in a putrid state, and is almost attended with fatal consequences, unless it can be prevented or cured — hence we find the *Small-Pox* more dangerous in adults than in children, and in very very hot and sultry *spring*s and *summers*.

Young people are less in danger, because they are under no apprehensions, a circumstance of great consequence; it behoves us therefore, as much as is in our power, to keep the patient in ignorance with regard to the distemper, more especially where it has been fatal in the family. A calm easy, and undisturbed mind is of great use in the cure of this and all other disorders*.

* I attended a young lady in the *Small Pox* when I lived at YARMOUTH; I luckily concealed the knowledge of the distemper from her, by pretending they were eruptions quite of a different nature; she had them very plentifully, though distinctly and kindly: drinking tea with her when all was over, and congratulating her upon the recovery from the *Small-Pox*, she fell from her chair, and was a considerable time before she could be brought to herself again.

From

From four to the age of puberty is the most favourable season: they are then less solicitous about danger; and are more conformable to rule; besides dentition being once over will not intervene, which might otherwise prove very troublesome on the eruption of the pock; the lists of those who have died of this distemper in the different parts of *Europe* prove that many more have been lost from infancy to the fifth year, than from thence to puberty. This is therefore the most proper age for *inoculation*.

SYDENHAM says, that when the blood is of a looser texture, and so easily admits of a change, it sometimes happens that the separation is performed by degrees without any considerable sickness, before the expulsion of the matter shews itself by the eruption of the pustules. Women who are of a more lax and soft texture than men, have this disorder more favourably therefore. People of a robust constitution, and who are inclinable to be fat, who indulge themselves in eating and the bottle, and use much exercise, stand but

but a precarious chance when attacked with the *Small-Pox*. Old men, whose fibres are tough and rigid, and whose vessels will admit of no great distention, and consequently of no reaction on the fluids, the condensation of which will be less, provided they be strong enough to support the fatigues of the disorder, frequently get through it.

Epidemic diseases chiefly and manifestly owe their origin to sensible qualities in the *air* which every-where surrounds us, to *bad diet, famine, long sieges, &c.* Now such as can remove and shift their quarters, though they be not far remote from the sick, will escape the danger. Experience tells us that diseases arising from manifest causes will so alter the human body and so contaminate the humors, that the sick person shall propagate the disease, which he himself at first caught by obvious and very evident means, so that even the most healthy, and who had not previously been exposed to the like causes, will be immediately attacked with it.

Thus

Thus it is very demonstrable that diseases may arise in the human body without any pre-existing infection, and a contagion nevertheless be brought on, which may spread itself with great violence, just as a fire occasioned by a small spark which destroys every thing before it as long as there remains any sufficient matter to feed it —.

The more attentively we consider this point, the more reason we have to be assured that the first person who had the *Small-pox* must have got them without infection. Now if this disease could arise from some other causes, it may again be reproduced by the same, without any pre-existing contagion. Certain it is, that the *Small-Pox* now-a-days prevail very much, because they seldom quit large cities; and the variolous contagion may last in its full force a good while — it cannot, however, be denied, but that it may be excited by a combination of many other causes without contagion, since it must have necessarily have happened so in its very first state.

The

The same may be said of all contagious diseases — for the *first man* who caught the distemper could not have taken it from another, and this may account for diseases which were formerly known as contagious, and which we are now entirely unacquainted with; the contagion having once been stopped in its progress, the disease will not break out again, unless the same concurring causes send it into action, which possibly seldom happens, and in some climates never. Thus, for example, the *Leprosy*, as described in *Leviticus*, as well as that of the *Greeks* and *Arabs*, which raged in the 12th century, about the time of the *Crusades*, and was conveyed by that means into *Europe*, became less frequent in the 15th century, and was scarce known in the 16th: — thus also the *sweating sickness*, so well described by Dr. CAIUS, attacked *England* five several times in the space of seventy years; it is now upwards of two hundred years since it has disappeared. It is very obvious that new diseases may spring up, from no very evident causes, which will spread their infection,

infection, but be destroyed sooner or later; and we have encouragement to hope it is verging towards its decline, as it grows milder in its appearance, and becomes slower in its progress; so the *sweating sickness*, on its first attack, killed in an hour's time; the patients after that died not till after the third hour; on its fourth appearance, it became not fatal till the sixth hour, and at last was scarce fatal at all. These reasons being premised, I am strongly inclined to believe the *Small-Pox* was brought into *Europe* by contagion; but when we reflect for how many ages past they have already existed, and that we still find from the most ancient records, that they retain the same strong marks of virulence, we have just grounds to conclude, they will not so easily be totally got under — especially when we consider how powerfully they spread themselves every-where abroad, and that even one very inconsiderable drop of the variolous pock will affect the healthiest man living, and in less than two weeks cover him over from top to toe
with

with pustules charged brimful with matter; even the very *effluvia* of a person in the *Small-Pox* will give the distemper; nay, I have known a whole school infected by a boy, though he had been perfectly cured, but had several red spots still remaining upon his face and hands — it has seized on people who were obliged to attend on the corpses and the funerals of such as have died of them.

Since therefore we find that the smallest drop of variolous matter can have such surprizing effects, and so long retain its malignity, it will follow that we can have small hopes of ever being able to stop its infectious progress —

Physicians having observed that scarce one in a thousand escapes the *Small-Pox*, nay, that even *fœtus*'s in *utero* have been attacked by them, and that they visit us almost universally at some one period of our life, concluded that the *seeds* of the disease was congenial to, and lay long concealed in the human body, before it became active and broke out.

Rhazes

Rhazes supposed that such an innate contagion existed whilst the *fœtus* was in the womb, and was communicated to it, and depurated the blood when put into motion, just as the turbid juice of grapes becomes clear and fine, after fermentation, separated from its lees: this hypothesis seemed to have had its followers, especially when it was considered, that those who had had the *Small-Pox* in *utero*, or when they were very young, were never subject to a second attack; they supposed this natural and useful despumation of the blood an incidental disease productive of the *Small-Pox*; and that those only died of them who were unfortunately affected by the too sharp and acrid disposition of the fermentation, or by its quantity; or who were so weak and infirm as not to be in a condition to support the hurry occasioned by such a depuration.

Many and various are the opinions of the learned concerning the origin of the *Small-Pox*; some give it to the fluid contained in the *amnios*, in which the *fœtus* swims as long as it remains in the womb, and which they

they believed served for its nutrition*; others again to that part of the navel-string which remains nearest to the body of the new-born infant, wastes and rots away, and which, by its adhesion to the sound parts for a few days, before it drops off, communicates some infection to the blood of the *fœtus*. The *capsula atrabiliaria* were by others supposed to contain the latent *fomes* of the Small-Pox. VIOLANTE, a writer of eminence upon this subject, (which was also handled long before by the famous Dr. WILLIS) endeavours to prove this, because the use of these parts had not hitherto been ascertained by *anatomists* and *physiologists*, and because these *capsulae* are much larger in infants than in a more advanced age, and not at all observable in old subjects; and because they contained a black fluid, which he confi-

* VAN SWIETEN says, *quem & ejus nutritioni servire CREDEBANT*: Our immortal HARVEY proved it to be absolutely nutritious, both from its taste and consistence, and from its being the same as is found in the stomach of an embryo.

dered as the *fomes* of the distemper. But, with submission to so great a man, I must confess myself not at all pleased or satisfied with his opinion: there are many parts in the human body, whose uses, though we still remain unacquainted with, may nevertheless be explored by future enquirers, which are much larger in the *fœtus* than in the adult, as, for example, the *glandula thymus*; nay, what satisfactory account can be given of the mesenteric glands with regard to *chylification*, and they are considerably large in young folks, though scarce discernible in old people? Besides as the *capsulæ atrabiliaræ* are so considerable in infancy, and so very small in old age, might we not expect the *Small-Pox* would be more fatal to the former than to the latter?—but this is not the fact; since we chuse to inoculate at that period of life and puberty — Do not violent intermittents and acute fevers attack young folks, should we not expect the *virus*, lodged in those *capsulæ* thus disturbed, would shew itself, and be brought into action? It is sufficient we know the
most

most healthy people will take the *Small-Pox* by infection, why therefore should we have recourse to any farther distant causes? Dr. HAHN very lately published a new theory, in which he attempts to prove the *Small-Pox* to have been coeval and coexisting with our first parent; nay, he would willingly exclude it from the list of diseases, considering it as a kind of *evolution of the human body*, by which a new set of small sanguiferous vessels are protruded from the skin, which had hitherto lain enveloped, and so are rendered fitter for their different functions—That there are many such principles of future productions in the human body, which lay useless and dormant, as it were, for a time, is evident; just as, when we shed our teeth, a fresh set have lain under the former, which now supply their deficiency—Thus do we perceive great changes in both the sexes about the time of puberty—his words are, *scilicet intellexi tandem, quod illæ ipsæ variolarum pustulæ revera sint totidem prægnantes arteriarum gemmæ, ab illarum ramulis sub cuticula abditis; de-*

terminataeque evolutioni suae propinquis, emissae. Quibus multiplicatarum incremento corporis summitatum vasculosarum stamina prorumpunt; soluto cuticulæ cum cute nexu, bullulas efformant; hocque tanquam totidem perianthiis tantisque custoditur latent, affluenteque succo benigno nutrita, justam maturitatem indipiscuntur, liberumque aeris accessum sine læsione ferunt. Quo ipso temporis momento feliciter impetrato, eadem variolarum gemmæ hoc usque florum conniventium more clausæ, diductis labiis suis rictum aperientes superfluas humiditates exhalare patiuntur; tum denique tanquam inutiles corollæ defluunt, vascula ipsa, tali floriandi ratione renata novaque cuticula uniuntur functionibus suis obeundis, paria sibi relinquentes —. He asserts that, as the buds preserve the tender parts of a plant, on their approaching evolution, so are the *Small-Pox* to the growing vessels; moreover, that as the buds of trees are in time defended by an unctuous matter which frequently sends forth a peculiar smell, so the *Small-Pox*, on their eruption, or when come out entirely, have

an odour particular to themselves, different from that which is perceptible in the corruption of any part, or which is produced by ulcers, the scabs moistened with *sanies*, nay, by the suppurated pock themselves. The pus of the *Small-Pox* which he calls the variolous liquor, so it be of a good sort, is like the liquor contained in the *amnios*, warming, nourishing, and purifying. He farther observes that the *perianthium* or *calyx* of flowers was intended to defend them from the injuries of the air, falls off as useless, as soon as they open and become stronger — so he considered the drying scabs in the *Small-Pox* — and these, he says, he frequently saw children devour with a seeming pleasure, and concludes, therefore, there could be no suspicion of any farther malignancy from the variolous matter, and that the skin becomes as it were renovated. These sorts of reasonings are more ingenious than true. Do not we know that the *Small-Pox* frequently occupy the internal parts which have coverings far different from the skin? Can we expect an *evolution*

of the vessels from these buds, and in such dangerous places? Are not the *fauces*, *velum palati*, &c. often covered with the Small-Pox? Old people, who have a dry, pale, and shrivelled skin, and which is little fitted to protrude such buds of future vessels, yet are not exempted from the disease.

That the variolous matter is infectious, is evident from its consequence in inoculation; neither is it mild in its nature, since we find ulcers which have been dawbed with it, have become troublesome; it will occasion much perturbation when re-absorbed into the blood; and if it happen to be deposited by *metastasis* upon any other parts, it will not only bring on ugly ulcers, but a *caries* of the bones. Nay, the very scabs of the drying pock, the *perianthia*, as HAHN styles them, of the *cutaneous buds*, carry contagion, as we find by the *Chinese*, who inoculate with them.

The contagion may no doubt be conveyed into the air, and by that means be received into the body by *inspiration*.

Do not we see people daily attending in the chambers of such as are in the *Small-Pox* immediately attacked, although they have neither approached, near, neither touched any thing belonging to them; nay, some, who cannot be said even to have entered the apartment, have been seized?—Now, if it be in the air, and may be conveyed away by the same means, it must necessarily follow that it must be of a very fine and volatile nature, and consequently the infection be as easily removed from the body by expiration, as it is received into it by inspiration. But it must be observed, that the *mouth, nostrils, aspera arteria, lungs, stomach, and intestines*, which all receive air into them, are moistened by a mucous, lubricating, and unctuous fluid, which entangles these infectious impurities by their viscosity, though they may be ever so volatile in their nature; and as the whole skin is unctuous, and exposed to the free access of air, it is not improbable, but that the infection may be so received, and thus invite the distemper. Various experiments

have been successfully made which support this assertion; only applying variolous pus to the skin, without making an incision and covering the part with an adhesive plaister, has given the distemper. Many physicians, as well as myself, have been witnesses to this fact — and that when people in the most sound state of health have had one pustule, or two at most, which became red, painful, suppurated, and eat deep into the skin, leaving a pretty considerable scar, a few days after they have taken the *Small-Pox*, attended with all their concomitant symptoms; nay, nurses who have attended the sick have prognosticated their approach, by the eruptions which they call the *mother-pock* — this led me to think the *contagious atom* adhering to a small portion of the skin might raise a little ulcer, invite the humors thither, and so bring on the disease — this we see is plainly the case in inoculation.

That the contagion is of so subtile a nature as to retain its malignity may be proved by many instances. In the year

1651,

1651, a young man who had the *Small-Pox*, put on a shirt in *Denmark*, which a woman afterwards washed in the islands of *Ferro* *, caught the distemper, which spread and made great havock there. A young woman conveying a letter, which a person in the *Small-Pox* writ to his brother, and keeping it a few days, was taken with them, though there was not, nor indeed had been, any signs of the distemper in the place where she resided —.

It is to be observed, however, that, when the variolous matter is too long retained, the distemper will be three or four days longer in coming out — the *Chinese* preserve the scabs of the drying pock for many years in a china vessel, closely stopped up and covered, and well secured with wax; they take two of the scabs if they be large, or four if they be less, adding a little musk; these put into cotton they form into a tent, and thrust up the nostril, and by that means convey the *Small-Pox*.

* Twenty-five in number lying in the North Ocean, subject to *Denmark*.

The greater or less degree of the *Small-Pox* does not depend upon the greater or less degree of the infection, but upon the disposition of the body attacked.

The thin *ichor* of the confluent *Small-Pox* differs *tota facie* from that of the distinct and kind sort; and yet we know from experience that this *ichor*, though taken from this most fatal and confluent pock, and infused into a wound, has produced a very mild and benign crop, and *vice versa*; this establishes the doctrine of MEAD, who says, "*præterea plus mea opinione refert, in quale corpus infundatur, quam de quqli eximatur, pestilentie virus.*"

Before I proceed, I think it necessary to discuss the opinion of some very learned and eminent physicians, who maintain that there are in the fluids of the human body some more apt to receive the variolous contagion than others; they saw that the smallest particle of the contagious matter was sufficient to bring on the distemper; but they observed at the same time, that the disease itself added force to the contagion, since the pus contained in every single

gle pock was infectious, and the whole man breathed, as it were, nothing but contagion — and thus assimilating into its own nature the many humors within us — these assimilated humors, or particles of them, they called the *pabulum* or *fomes* of the disease; and imagined that on the greater or less degree of this *pabulum* or *fomes* depended the greater or less virulence of the disease. They farther imagined, that they whose humors contained not these assimilated particles were free from the infection, and that therefore those who, by having had the *Small-Pox*, had destroyed this *pabulum* and *fomes*, would never have them again. They conceived that this *pabulum* was not confined to any one particular part, but that it was equally distributed through the whole human economy or mass of circulating fluids. — This doctrine they endeavoured to establish by practical observations; for, if this *fomes* or *pabulum* be equally dispersed through the whole mass of humors, it must necessarily follow that the quantity of the infectious *pabulum* will be in a ratio proportioned to the

the humors — and that this is so we have the authority of MEAD and other respectable names. — But, allowing all this to be true, it will by no means sufficiently prove that only some of the particles of our humors supply the *pabulum* or *fomes contagii*; and that when these particles are destroyed, the infection ceases — because if that were true, then a man recovering from the *Small-Pox* to a perfect state of health, the variolous *pabulum* or *fomes* being utterly overcome, could not retain that infection which was already destroyed — but this we know from experience is false —.

Convulsions on the eruption of the *Small-Pox* is no unfavourable symptom, in the opinion of SYDENHAM; because it shews nature is happily employed to determine the variolous matter to the skin.

When physicians are engaged in exploring the nature of diseases, they should ever carefully attend to every change made in the humors during the whole course of them, that so they may discover the best methods of cure. In the begin-

beginning of the *Small-Pox* they find the blood little changed from its natural state; SYDENHAM, in a man of a full and plethoric habit of body, and in the prime of life, who was seized with the *Small-Pox*, observed the blood, which he took away on the third day, good and florid, having, (as he says) as yet received the spirituous venom only, and not that putrefaction occasioned by a longer continuance of the disease; but, when on his recovery he was bled again on the twenty-first day from the first seizure, it resembled pleuritic blood, and differed little from *pus*. Practical observations tell us, that the blood in this disease will sooner or later acquire a certain degree of inflammation and spissitude. BAGLIVI looks upon this as a certain sign that the *Small-Pox* will be dangerous and numerous.

The variolous contagion does not always immediately produce its sensible effects, but frequently remains inert and inactive for a long time, and breaks out at last; of this we have many instances in daily practice,

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as well as in the writings of those who have professedly treated on this subject.

If an incision be made on the skin, and variolous matter be applied, the wound will heal in a few days, and no unfavorable symptom arise from it, in case the person has had the distemper; but, if the like operation be performed on a subject which has not had the *Small-Pox*, we shall soon find the disorder come on.

Different symptoms will arise according as different parts have been affected by the variolous matter, and in proportion to the strength of the disease, the epidemic constitution of the air, the age of the patient, &c.

A fever frequently precedes the *Small-Pox*, and mostly grows more violent before the eruption, attended with an excessive burning heat, and in grown persons with a propensity to sweat: the eyes sparkle, and the vessels of the *adnata* frequently appear much inflamed. They are often attended with a violent head-ach and delirium, all which, at this period, have no dangerous tendency,

tendency, but generally cease on the eruption. A great lassitude and obtuse pain of the limbs is very common, together with a most acute pain of the back and loins.

I always suspect danger where this violent *lumbago* prevails, and have known the distemper continued beyond the 20th day, but the patients have died at last, overpowered by the putrescent state of the humors, and after having suffered greatly from them; but this never happens to those who have been inoculated; their pains chiefly are about the breast and shoulders, and are rather obtuse and wandering than fixed and acute. HIPPOCRATES ever suspected this symptom in other diseases; "*ex dorso dolore morborum principia difficilia*;" and a little further, "*Lumborum dolor, sine causa manifesta celeriter invadens, maligni mortis signum.*"

It does not, however, so clearly appear that the immediate action of the variolous contagion should occasion this visciditv of the blood; but that it rather is owing to the burning and acute fever which is excited
by

by the violent *stimulus* of the contagion. When therefore an acute fever and violent heat accompany this disease in its first stage, we should not attribute the inflammatory *lentor* of the blood to the infection itself, but to the increased heat and fever occasioned by it.

Some very celebrated writers were of opinion that the virus of the *Small-Pox* rather fused than thickened the humors. KIRKPATRICK says, he knew a cough which might be attributed to a *lentor*, arising from a cold and checked perspiration, entirely go off in forty-eight hours after inoculation. MEAD observed that the *Small-Pox* were frequently of service to such as whose blood was corrupted by nature, by bad living, or bad tumors of the glands in consequence of a viscid lymph. This is confirmed by many observations. LISTER tells us he had seen the blood of those who had the worst and most dangerous sort of pock, when cold, so fused, and the red crassamentum so thin, as to yield to the gentle touch of a feather—

He

he farther adds, that the blood drawn from the arm of those who voided bloody urine was so watery and putrid, that the very crassamentum floated in the vessel like so much serum. It is to this fusion of the blood we are to attribute these hæmorrhages which happen: "*sepiissime hoc tempore sanguis tenuis non ex re tantum, naribus, & oculis emanat, sed per cunctos etiam corporis meatus, maximeque urince itinere perfluit, quo etiam primis ægritudinis diebus nonnunquam egreditur*" says MEAD.

In the beginning of the disease the patient is seized with a fever, attended with great and perpetual heat; every symptom, at that time, indicates an inflammatory diathesis and viscosity of the blood, and that nature, driving out the contagion, is endeavouring, by a critical *metastasis*, to throw it upon the surface of the body; the disorder may be very violent, but the vital strength will be sufficient to oppose the disease, and render it less dangerous; although it might be expected from the large crop of the pock, the tenderness, re-ab-

sorption of the pus, fever, &c. — But it sometimes happens, that the variolous pus, by destroying the vital powers, may be injurious ; there will, indeed, be no apprehension from inflammation or fever, for we can perceive little or no heat; the body, on the contrary, will rather be cold, the pulse weak, and almost imperceptible to the touch, attended with anxiety ; soon after which, symptoms will come on of a putrid dissolution, succeeded by hæmorrhages, yellow, debilitating, cadaverous-smelling *diarrhæas*, livid spots, and many other direful harbingers of approaching death.

The celebrated MEAD, observing the variety of symptoms attending the *Small-Pox*, ingeniously distinguished them into *simple* and *malignant*. He called those *simple*, which appeared with a very slight fever, of short duration, were soon brought to maturation, contained a good pus, and soon dried and fell off. — An inflammatory fever usually attends this sort, but disappears at the instant of the eruption.

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They are called *malignant*, when accompanied with a malignant fever, anxiety, a sudden deprivation of natural strength, if they do not suppurate, but rather become gangrenous, and often fatal in consequence of a putrid solution of the humors, before they could come to maturation, had they been of a more benign sort. MEAD preferred this distinction to that common one into the *distinct* and *confluent*, because it sometimes happened that the distinct sort was attended with a malignity which occasioned sudden death, though the eruption seemed trifling, and to bode little or no danger to such as were not very attentive and skilful. This distinction, if properly attended to, will be of much consequence towards the cure of the disease: since a very different method of cure will be necessary where there is inflammation, than when the malignity entirely breaks the cohesion of the blood, and where the strength is entirely spent and exhausted. We are not to reckon the time of the disorder from its first appearance, but from the sickening of the patient.

The pustules do not appear till the eighth or ninth day of the inoculation; before which the patient is brisk and lively, and perceives no visible alteration in his breath.

As an inflammation may be removed without any subsequent suppuration, provided the humors be mild, their movement calm, that there be no obstruction, that the vessels be flexible, and the fluids thin; so it may in the *Small-Pox*, when that inflammatory diathesis already adheres so closely to the vessels of the skin, or will soon obstruct the minute passages of them, yet is attenuated so as to fly off by the exhaling vessels —.

SYDENHAM remarks, that the confluent and even gangrenous *Small-Pox* usually succeed violent fevers; but what may we not fear, when a great acrimony of the humors prevailed before their appearance, or were brought on by the contagion itself? It must be observed, by the way, that this inflammatory tendency of the *Small-Pox* only prevails when the contagion received has excited a violent acute fever; but not
when

when the vital strength has been destroyed by it, where the pulse is quick, but low and feeble, attended with a sensation rather of cold than heat.

Physicians who are conversant in practice will, I believe, freely acknowledge, that it is not a very easy matter to distinguish the *Small-Pox* at the first from any other acute inflammatory disease. They will therefore be cautious how they pronounce upon that head at first sight, and be content to declare their suspicions, especially when they know the patient never had them; since no mischief can accrue by their treating the disease as they would any other acute inflammatory one, should the eruption happen. When the *Small-Pox* is epidemic, every judicious practitioner will always prudently have an eye towards that distemper, and its various symptoms, so that every difficulty may be obviated, should it appear. Now, in large and populous cities, where the *Small-Pox* are more or less, and what is called *sparadic*, and are so mild that physicians are

seldom called in, especially to the lower class of people — it will now and then happen that men, even in full and extensive practice, not immediately thinking of the *Small-Pox*, have treated them in the beginning as acute inflammatory fevers, and by that means may have endangered their reputation, in case it occurred in genteel and noble families — hence it is highly necessary to be very circumspect in this particular, and not even to confide too much upon the accounts of the family or servants, since their ignorance may have led them to take the spurious for the genuine and true *Small-Pox*.

We should not be too positive in our foretelling the event of the *Small-Pox*.

I do not remember that any physician hitherto has been able to account for that change of the human body, so as to secure those who have once had the *Small-Pox* from having it a second time; or what that particular *idiosyncrasy* is, by which a man shall pass through life without having them at all.

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It only remains that, when this infection, by its stimulus, begins to disturb a healthy subject, we use our best and earliest endeavours to expel it, or to lessen the virus which otherwise would convert all the humors into its own nature; for, though this infection, once received, disturbs all the functions of the body, and frequently excites a severe fever, all this may be well supported, since few die at this period before the eruptions have appeared, and when they do appear the symptoms generally abate, nay, frequently cease altogether. But, when this deleterious contagion has assimilated many humors in the body, then will a copious crop of pustules come out, which, while they remain in an inflammatory and suppurating state, will produce a new fever, and kill the patient. A putrid fever will prevail afterwards from the re-absorbed pus, and rather more so from a gangrenous matter, if the *Small-Pox* be of a malignant kind, and the patient will die — especially if the internal parts are equally affected with the external. —

Now if the cutaneous vessels can be so disposed as to transmit the assimilated matter which is deposited there, or that it may be so attenuated as to give them a free passage by the exhaling vessels, either wholly or in part, in that case there will be but few if any pustules, and the disease be entirely removed without much apprehension of danger. — Besides, though the matter of the disease, impacted in the cutaneous vessels, should inflame the pustules, we may yet hope to prevent a suppuration by proper and timely remedies.

Physicians have directed *mercurius dulcis* in the *Small-Pox*, in order to promote a favourable eruption, as well as to lessen their number. A physician gave his daughter, a child of ten years of age, a pretty smart dose of *mercurius dulcis*, as all the symptoms of the *Small-Pox* were upon her; viz. gr. xx. with iv. gr. of *sulphurated scammony*; she had three stools, and, towards evening, vomited very plentifully; she afterwards slept very composed and quietly; the *Small-Pox* notwithstanding
never

never came out, though they were not only epidemic, but her brother lay ill, and had them very full at that time.

A woman just recovered from the pox had an *emplastrum de ranis Vigonis cum quadruplici portione argenti vivi* on the *os sacrum*, in order to remove some tumors; being seized with the Small-Pox she removed the plaister, she was all over full of the pustules, but the place which the plaister had covered was entirely free from them.

These and many other instances of the like nature prove that quicksilver, when prudently administered, may be of service in this distemper.

The *vinum antimoniale*, and all other antimonial preparations, it is well known, when given in small doses, instead of acting on the *primæ viæ* determine themselves upon the skin, and produce a *diaphoresis*, and sometimes very successfully promote expectoration.

SYDENHAM, when he suspected the pox would turn out confluent, first directed bleeding,

bleeding, and then gave an antimonial vomit: nay, if, on the eleventh day, the salivation was stopped, and the patient consequently in imminent danger, he directed the *vinum emeticum ex infusione croci metal-
lorum*, first in small doses, which he gradually increased to larger; and he seems to have placed great hopes in this method, from which he sometimes, though not constantly, found happy effects. *Sulphur*, it is well known, destroys the contagious particles which float in the air, and counteracts the operation of poisons, and is of established efficacy in cutaneous disorders. It is not to be wondered therefore that physicians should recommend sulphur as a prophylactic in the *Small-Pox*, since from a careful admixture of sulphur and quicksilver, a gentle and mild remedy may be compounded, which, without disturbing the animal economy, we nevertheless find to have wonderful effects in many cases: *æthiops mineralis* is a medicine of this kind — this, if kept closely confined in a vessel, and placed on a very brisk fire,

fire, will become a cinnabar, from which the same effects are expected.

LOBB gives us some cases of persons who never had the *Small-Pox*, though they constantly attended upon, nay, even lay in the same beds with those who had them, and this by taking two drachms of æth. min. mixed with a certain quantity of sulphur. To these were occasionally added myrrh, camph. and other medicines, but the chief dependence was on the æth. sulph. and cinnab. which not only are preservatives against the disease, but even when the person is attacked, render it less destructive, provided they be taken in large and proper doses.

These remedies, however, did not always succeed; for we find that in *Edinburgh*, in the year 1733, when the *Small-Pox* was epidemic in that metropolis, very many died of the confluent kind, though mercury had been administered, and the *æthiop. min.* given in pretty sufficient doses by way of prevention —,

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It is certain that an universal *antiphlogistic* method may be very rationally adopted in the beginning of this disorder, when the symptoms of an approaching inflammation appear — since no prudent man would omit using his best endeavours to prevent a phrenzy, angina, pleurisy, or such-like disorders, as far as it lay in his power to do it.

RHAZES, as Dr. MEAD informs us, used in the beginning to direct large and copious venesection, even till the patient fainted away, whenever there appeared a plethoric disposition and too great an agitation of the humors — of which the following are the symptoms; yawning, restlessness, pain in the back, redness of the face and eyes, great and violent head-achs, a strong and full pulse, shortness of breath, a red, thick, and turbid urine, and a coldness of the body, &c. He however farther cautiously adds, that, in case these symptoms be not violent, though ever so manifest, we should be more sparing of the lancet, and much more so if they are but slight. He advises

vifes bleeding, even after the eruption, provided the patient be strong enough to bear it, when, with the other fymptoms of the *Small-Pox*, the patient was hoarfe, complained of a difficulty of breathing, a compreffion of the *fauces*, and a pain in the throat, for he much feared fuffocation would enfue otherwife — and he fo much dreaded the intense heat of this difeafe, that he gave frequent and repeated draughts of cold fnow-water — he commended butter-milk, whey, lemon and orange juice, &c. By this management he propofed to allay the intense febrile heat, in the firft ftage of this difeafe. But the moment the eruption appeared, he endeavoured to promote it by friction, and wrapping up the body in cloths — he moreover ordered the patient to drink cold water in fmall and repeated draughts, and at the fame time expofed the whole body, excepting the face, to the fteams of hot water. His intention in directing the cold water was to prevent the pock from feizing the internal parts, whilft by the fteams of the hot water, directed

directed to the external parts, he so relaxed them as to admit a freer lodgment of the morbid matter upon their surface. And, in order to defend the eyes from the infection, he recommended them, together with the face, to be washed frequently in the day with cold water. He likewise prescribed subacid and sharp gargles, and even cold water, to preserve the *fauces* and inside of the mouth, and this was often to be repeated to prevent too large an eruption in the throat and mouth, and consequently suffocation as much as possible. He utterly disapproved of baths and stoves, especially when they were overheated ——. *Thus it is very evident, that the antiphlogistic and COLD regimen was not only approved of, but was in general practice amongst the ancients.*

Forestus followed the same steps; bleeding certainly is not so essentially necessary in this disease, upon its own account, as because it lessens the plethora in the vessels, and so disarms the fever of its violence, and reduces it to its proper standard —. *SYDENHAM* says, his principal design upon these

these occasions was, " that such an equa-
" ble ebullition of the blood be maintained
" that it may neither finish the separation
" too hastily by rising too high, nor re-
" tard or render it imperfect by sinking too
" low." If the disorder was not attended
with very unfavourable circumstances, he
was satisfied if the patient did not expose
himself too much to the air, and abstained
from wine and flesh meat — he utterly
exclaimed against a hot regimen and the
use of cordials — in every other respect he
was by no means very solicitous. But when
he was called to strong young men, who had
made too free with wine or any other spiri-
tuous liquor, he always judged bleeding ne-
cessary — there can be no doubt of its pro-
priety where there is a plethora, and an in-
tense heat in the beginning; I have in this
case even frequently bled children; daily ex-
perience tells us that this antiphlogistic me-
thod is rational, and attended with success—
but when all the symptoms attending the
beginning of the disease are mild and fa-
vourable, we need give ourselves very little
trouble

trouble, any farther than to direct a moderate light diet.

Now, since all the symptoms usually increase till the eruptions come out, and then lessen or entirely go off, it happens frequently that about the time of the eruption, or even after several have appeared, that the fever will be intense, the breathing will become difficult, attended with great anxiety. — Many able physicians were of opinion that bleeding would be injurious — and *Diemerbroeck* ever recommended it to his disciples, to abstain from the lancet whenever the eruptions appeared upon the skin. — I can with truth aver that I have ordered bleeding after the appearance of the pock; nor could I ever discover that the eruption was, on that account, by any means impeded. — FRIEND, MEAD, VIOLANTE, and many others of equal authority, have not only approved but prescribed the same. — MEAD expressly says, “*sæpe observavi, cum initio ægritudinis exantlematu parvula & densa morbum pessimi generis minarentur, misso semul at-*
“ *que*

que iterum sanguine, rerum faciem ita mutata fuisse, ut majora & numero pauciora comparerent, &c.

We endeavour to cure all other inflammatory disorders by *resolution*; have we not the same reason to attempt the like method in the *Small-Pox*? It is true that we should prevent, as much as may be, a suppuration in other inflammatory disorders, because, as they occupy the internal parts, we cannot so safely answer for the dislodgement of the pus; now we know the *Small-Pox* come out chiefly on the surface of the body, though sometimes the internal parts are also engaged; besides, from the great number of the suppurating pock, a violent malignant fever, with symptoms of the most dangerous kind, arises, the pus is re-absorbed, putrifies, and entirely destroys every thing; or by a sudden translation brings on new disorders, and those of a most terrible

nature. — It is our duty, therefore, to use such methods as we find have been successfully employed in other inflammatory disorders; that is, to prevent a suppuration as much as we can, or, at least, to lessen the number of the eruptions — nor are we to imagine that the *Small-Pox* mix with the other humors of the body, though the number of suppurating eruptions be lessened; since we know from observation that this matter passes through the pores of the skin, and that even the pimples which appear on the surface will vanish without suppuration.

The *antiphlogistic* method is not so necessary in the malignant *Small-Pox*, as such medicines as are adapted to powerfully counteract the sudden putrefaction which may happen, which, at the same time that they prevent the too great fluidity of the humors, invigorate and strengthen the vital powers.

If

If the vessels of the internal parts, as well as of the external, can be disengaged from obstructions, an inflammation and all its consequences, which might otherwise happen, may be prevented. And this may be effected by whatever can relax the vessels, such as by applications of warm water and the vapours of it — for, when the matter of the disease finds an easy passage through the vessels, it will entirely, or in part, pass off, and no eruption, or at least very few, will appear; which could not have been brought about without the interposition of such an administration. I have seen many of the pustules carried off without suppuration by the application of such a foment.

This I particularly remarked in the case of a woman whom I most carefully attended. — I ordered sponges dipped in warm water to be constantly applied to the skin; thus many of the

pustules were carried off, very few suppurated —. The particular smell which proceeds from those who have the *Small-Pox* sufficiently shews that the morbid matter transpires; and this is farther confirmed by observing that people who have not had them, frequently catch them by this means — By so much the more perspirable the skin is, by so much more favourably will the pock appear; this accounts why children and those of a lax habit generally come off better than the robust, or those who work hard —.

Physicians of eminence have in later times (in imitation of RHAZES) recommended the use of warm baths, when they found the skin so dry and hard as to prevent the eruption of the morbid matter. LEMERY boldly, but successfully, used this method, which was also followed by Dr. MARTIN, a physician of *Switzerland*, who ordered the

the whole body to be fomented with warm water every four hours till the eruptions appeared, by which means the violence of the disease was greatly lessened, which came out very kindly, and left no marks behind it.

But what above all confirms the utility of bathing, is the custom which prevails among the ignorant inhabitants of *Hungary* and the *Carpathian* mountains *, climates pretty severely cold, who, by the use of warm bathing only, with scarce any other remedies, cure themselves of the *Small-Pox* — and this method, which they hold in profound veneration, they have pursued for many ages past. The instant they find (at a time when the *Small-Pox* is about) the patient inclining to be more than naturally hot, they put him into a fresh water bath, moderately

* They divide *Hungary* from *Poland*.

warm for half an hour, and when taken out cover him with cloths well aired at the fire, and so get him into bed. This is repeated twice a day till the pock begins to mature, which generally happens on the third day after the eruption; they still continue to bathe, but instead of common water they use whey; or, if this cannot be come at, fresh milk, with an equal quantity of water; by this means the pock ripens quickly, scales off without leaving any marks, or having any bad consequences. —

BOERHAAVE always strongly urged the use of baths or fomentations to his pupils, whenever they suspected the *Small-Pox*; and he advised this with a view to invite the pock to the extremities, so that the upper parts might be guarded against their malignancy — He farther recommended the mouth, fauces, and nostrils to be constantly washed

washed with the same emollient decoction used in the bathing or fomenting —.

But he found many opponents to his method of ordering clysters of this decoction to be thrown up every twelve hours, which they imagined dangerous and of a pernicious tendency; some indeed allowed of their efficacy in the very beginning, but upon no account during the remaining course of the disorder; for they rather approved that the body should be even constipated — I have known many, who were of this opinion, very uneasy, though the distemper was very favourable, lest it might turn out otherwise, when they found the patient was rather open in his body; for, since the disease naturally made its way to the skin, they feared a too lax state of the bowels would interrupt the *metastasis* — *cutis raritas* *alvi densitas*, says HIPPOCRATES; an

aphorism which led them into this opinion — and in this they were farther confirmed, when they saw the most malignant sort of the *Small-Pox*, for the most part, attended with a profuse discharge of very fetid and cadaverous smelling fæces, and a great debility and loss of strength; the danger arising in the distemper, by the bye, is not owing to the looseness, but to the very offensive and fetid smell of the excrements which indicate a great malignancy, and which, were they long retained in the bowels, would produce most fatal consequences.

MARTIN was so determined in his opinion upon this matter, that he declares he never knew any bad consequence arise from constipation, even to twenty days, excepting a troublesome discharge of the indurated fæces — however he, in another part of his writings, says he knew a lady who was
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so coſtive for eighteen days, that ſhe was almoſt faint with the ſtrong efforts ſhe made to obtain a ſtool, which could neither be procured by clyſters, fomentations, nor ſuppoſitories, till the *ſpeculum ani* was applied to dilate the ſphincter, and the fæces brought away by the help of the *forceps*. I ſhould think no prudent man would expoſe his patient to ſo much difficulty — he was ſo fearful of a *diarrhœa*, in every ſtage of the diſorder, eſpecially if attended with griping pains, particularly about the time of eruption, that he pronounced it ſymptomatic and deleterious, and never heſitated to check it, by giving paregorics in ſuch doſes as he thought ſufficient to answer that purpoſe. He had many followers; and I cannot, without regret, recollect my attending a lady who in the very flower of her age was ſeized with the confluent *Small-Pox*, of which ſhe died

died on the eleventh day ; and that I could not, with all my persuasion, influence them to throw up an emollient clyster, though she had been obstinately costive throughout the whole time of the disease. I am happy to find many have grown wiser from experience, when they saw the repeated good effects of emollient clysters. HIPPOCRATES condemns too long a retention of the fæces ; for he feared a fever or too dangerous a flux would ensue ; and GALEN observes that all disorders of the brain are aggravated by constipation.

Many celebrated men, remarkably skilful in their investigations and cure of this disease, embraced a contrary opinion. SYDENHAM pronounces a *diarrhœa* to be pernicious, if it arise from a striking in or from a sinking of the eruptions ; when the patient, too greatly affected by intense cold, by imprudent
of

or immoderate venesection, or by over-purging, has been so weakened as to want sufficient vigour to push the variolous matter out — In children, however, it should not be checked in the confluent *Small-Pox*, as it accompanies this kind in them as the *salivation* does in grown persons, nature providing one of these evacuations to expel the morbid matter; and many have died by the unseasonable endeavours of some imprudent women, who falsely conclude it to be equally dangerous in *this* as in the distinct kind; not knowing that it is only dangerous in that sort where the evacuation is made by pustules, but is here the work of nature, endeavouring a passage for the disease to escape. HOFFMAN is so far from fearing a looseness in this kind of *Small-Pox*, though it were considerable, that he declares he has known it run through the whole course of the distemper

temper without danger, neither hindering the eruption or the suppuration, or causing the variolous matter to strike inward — he confirms the observations of AMATUS LUSITANUS, who attended one hundred and fifty boys in the *Small-Pox* and *Measles* in one summer; those who were occasionally purged, recovered; but they who were not, either died or were afflicted with acrid and almost gangrenous ulcers. He moreover advises the physician not to permit the patient to be costive for eight or ten days, which might bring on a train of very troublesome, as well as dangerous, consequences; he cautions us, however, against all eccoprotics of the mildest kind, and even disapproves of the gentlest clysters at the time of the eruption. We find the like observations in many other authors. VIOLANTE declares he has known sixty stools brought away in the space of twenty-

twenty-four hours, which, so far from preventing, promoted the eruption of the pock.

Whatever we do, we must endeavour to render the vessels so pervious as to admit and transmit the humors, and by these means enable the variolous matter to pass off through the pores of the skin, and such as are viscid and adhere, to give way to fomentations, and so be discharged before they could come to suppuration — and this is done by frequent draughts of soft, emollient, and diluting liquids — should the fever be so acute as to endanger a putrescence of the humors, acids may be added to their drink, which are of infinite use in the confluent *Small-Pox*, as that sort is generally attended with a most putrid, cadaverous, and fetid smell. — Whey, milk and water, barley-water, tea, coffee and milk, &c. are, under proper dilutions, a very useful and pleasant

sant beverage. SYDENHAM utterly condemned flesh-meat and wine; he allowed warm small beer, and, indeed, I never knew any bad consequence from this liquor, especially if the patient had been accustomed to it. Broths made of meat should be very thin and diluted, and those too should be of veal or chicken, with the addition of barley or rice, lemon or orange juice. *Panada* is also a very fit nourishment — the whole intention of a regimen should be directed to the support of vital strength.

SYDENHAM always kept the body so covered as to promote a gentle perspiration, wrapping up the hands in gloves, but he was very careful that they were not confined in too close an air — He was less anxious about the head and breast than he was about the extremities, which he guarded as much as he could from the cold, and this
with

with a view to draw the eruption downward. — HOFFMAN warmly recommended fresh air to be let in at the windows, and declares that he has known many, who might otherwise from the nature of the disease have recovered, to have died for want of this precaution, especially the poor, who were obliged to lie in low and confined places. — He farther observed, that profuse sweats, if they were of any continuance, were dangerous. Though I should scarce recommend persons who have the *Small-Pox* upon them to expose themselves abroad to the cold air, I am, notwithstanding, confirmed in my opinion, by long experience, that it is not so injurious as it is commonly supposed. — I have known many who have come to my own house to consult me with the eruptions upon them, but which they considered not as the *Small-Pox*; and not one of them to my knowledge

knowledge ever miscarried. — I have seen country children playing about with them in the open air without the least bad effect. The like happened to myself. — I was, at sixteen years old, seized with a fever attended with a delirium; I took not, however, the advice of a physician, but contented myself with diluting liquors, baked apples and bread, &c. — in the morning upon waking, and thinking myself better, or rather well, I paid a visit to a friend; it was at this time the cold month of December, and the snow then covered the ground — As I grew warm by the heat of the chamber, my face, neck, and hands were all over pimples; we concluded them to be the *Small-Pox*; upon my return home I consulted a physician, who immediately declared it to be so, and chid me for having so imprudently exposed myself to such intense cold — the pock however was very favourable,
though

though I was very full, and I got through without the least degree of danger. — When the *Small-Pox* are epidemic, physicians naturally have an eye to them when they are sent for to persons who, not having had them, are seized with a fever. But when they happen to be only here and there (as it generally is in large cities) physicians frequently unwarily, though otherwise able and experienced men, are led to treat the sick as if they only had an inflammatory acute fever. BOERHAAVE confesses himself to have been so mistaken in the case of a young man who was seized with the worst sort of confluent *Small-Pox*, as he had been very irregular in a hot summer. BOERHAAVE considered it as an acute inflammatory fever, and pursued the antiphlogistic method — he had no reason to repent it, when the eruption appeared: — *Ballonius* confesses the same thing, when

he had bled two young girls who had a fever, which was attended with excruciating head-ach, &c. — “ *immo*
 “ *inopinato*, says he, *venam secuimus*,
 “ *& medicamentum purgans dedimus*;
 “ *die sequenti aut postridie apparent va-*
 “ *riolæ & multo melius habuerunt, quam*
 “ *quibus non ausi fuerimus idem exhi-*
 “ *bere.*”

SYDENHAM, whose candour and sagacity demand our utmost veneration, confesses, that he has frequently committed mistakes upon the first appearance of an epidemic disease, which, upon a nice and critical examination, he happily corrected.

The *Small-Pox* are divided into three different stages — the first is, when they begin, to the time of their eruption; the second, from their eruption to their suppuration; the third, from their suppuration to the end of the disease, whether it be for recovery, death,
 or

or into any other distemper. — As different symptoms attend these different periods, and demand a different treatment, we find this division very useful as well as necessary.

The first state, or, as it is generally called, the *febrile state*, most usually begins with a chilliness and shaking —. It is aptly enough called the state of infection, because it is that period of the disease wherein this contagion, attacking the body, is rendered active, and, disturbing its functions, causes the disease by assimilating a part of the hitherto sound humors into its own nature, which whilst it is thrown by a critical metastasis on the external surface, the pustules appear, and then begins the second state, which is not always attended with a fever.

The first state is generally shorter when the eruptions are many in number, run into each other, and are con-

fluent, than when there are few, and those distinct — At first the pale red pustules appear on the face as large as the head of a small pin, and on the neck, arms, &c. and afterwards on the whole body. They soon grow larger, and resemble flea-bites, from which however they may be very easily distinguished, because they have not that small mark in their middle which these insects make in sucking the blood. The pustules are more readily observed in the face and neck, because they are more exposed to sight — I have often seen them as early on the head, when it has been shaved — they next come out on the hands and arms, then on the body, though we seldom meet with many there, if they prove mild and of a distinct sort; and lastly on the extremities. As soon as the eruption appears, the symptoms which attended the state of the infection go off, and so
entirely

entirely leave the patient that he almost thinks himself well — and now the pustules, which were apparently flat, begin to plump up, and so successively proceed to do on the different parts of the body, for they never come out all together, unless in the very worst sort of the confluent kind. — The eruption commonly takes up three days, in the distinct kind, sometimes four, nor are they completed till about the seventh day. It is true that the pustules do not all suppurate at the same time; for whilst they are drying and scabbing off in the face, they are filling in the extremities — neither are all the pustules of the same size; for I have often seen some small ones interspersed with the larger, which are, nevertheless, filled with the same variolous matter, and at the same time. I have likewise known them to come out later than the larger sort, on the sixth and seventh days; and

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yet have ripened and dried away with them.

In the beginning of the infection, should the fever run high, and the patient be delirious, we are not therefore to look upon this as a dreadful symptom. But if, during the eruption, the other symptoms are already abated, or entirely ceasing, the *delirium* should still continue, or, when calmed, return again with greater fury, whilst the pustules on the skin are violently inflaming, and proceed to suppuration; then indeed we have much reason to fear that the membranes of the brain are likewise in a state of inflammation, and that the consequences may prove fatal. The very learned Dr. FREIND looked upon a *delirium* coming on after the eruption of the *Small-Pox* in such a terrible light, that he declares he never knew any one patient who ever recovered — and HILARY avers the same,

same, observing, that in such cases the pupil of the eye is very red and inflamed; this he looked upon as a most dangerous and fatal symptom. When I met with such cases in my practice, I boldly proceeded as I would do in a *phrenitis*, and, I am happy to declare, have saved many who could not well be said to have been free from the most alarming situation.

A *delirium* in the *Small-Pox* is occasioned by the violence of the fever, the intense heat and rarefaction of the blood, and the fulness of the vessels; when these causes are removed, the *delirium* ceases of course, even in the time of the eruption, and as the other symptoms abate. Nor is it at all wonderful, or improbable, that a *delirium*, a *coma vigil*, or other disagreeable evils, should happen, whilst a few pustules fix on the meninges of the brain, and should remain there whilst they

continue to inflame and suppurate, but should cease when the suppuration ceases, and the patient recovers.

LOBB relates the case of a woman who, in the distinct *Small-Pox*, about the time of the eruption, was seized with a *delirium*, which continued through the whole disease; she recovered, however, without the assistance of much medicine, or indeed of a great deal of nourishment — It must be observed however that on the third day of the disorder the *menfes* came down and continued to flow moderately; this discharge was undoubtedly of infinite use, because it emptied the vessels, and by that means lessened the impetus towards the head. And yet it is certain that a *delirium*, about the time of eruption, if it be not owing to the violence of the fever, or to the rarefaction of the humors, is very dangerous — Whence BAGLIVI says, “ *Si circa*
“ *quantum,*

" *quantum, cum jamjam erumpunt, ca-*
 " *put impetant cum magno calore, anxie-*
 " *tate, motibus tendinum subfultoriis, &c.*
 " *statim impetro cucurbitulas scarifica-*
 " *tas scapulis, & momento fere, facta*
 " *quasi furentis sanguinis revulsione,*
 " *omnia prædicta symptomata veluti in*
 " *ovo suffocantur, & paulo post feliciter*
 " *erumpunt variolæ, ut pluries vidi-*
 " *mus.*"

But, besides these untoward symp-
 toms, which happen when the in-
 flamed *papulæ* occupy one or other of
 the internal parts, and thereby pre-
 vent the exertion of their several func-
 tions, others will arise, if a very nu-
 merous crop should spread themselves
 over the whole body externally; for
 then an universal inflammation would be
 the consequence, and the humors be
 inwardly repelled. Nor would it be
 a desirable circumstance to have the
 face and head covered with a great
 number

number of *papulæ*, because the innumerable arterial branches of the external carotid would, in that case, become impervious those consequently which remained pervious, as well as the branches of the internal carotid, which are everywhere distributed over the brain, would be too much strained — the internal membranes of the nostrils, mouth, and fauces would swell, and discharge a tough viscid saliva. SYDENHAM therefore observed, that a salivation sometimes comes on, upon the first day of the eruption, sometimes not till a day or two after. — In children a *diarrhœa*, perhaps from their swallowing the copious and acrid spittle; those are the discharges which should partly carry off the variolous matter, especially when it is too copious to be evacuated by the eruption of the pock: BAGLIVI observes, from VALSCHMID, “ *qui in variolis maxime sputant rardè*
“ *moriuntur,*

“ *moriuntur, nullumque sputatorem in*
“ *variolis vidi mortuum.*”

It is universally agreed that a bleeding of the nose, in the beginning of the infection, is of service; but when the eruption appears some mischief is suspected, especially when the pock turns pale, or entirely sinks; for then there will be reason to fear the variolous matter is driven in, and some dangerous event will happen. — Neither are we to be uneasy when we see the *catamenia* at the time of the coming on of the distemper, since they will by no means prevent the eruption. But, if they appear before their due time, then indeed we may apprehend danger. *Diemerbroeck* says, “ *Idque in hoc morbo*
“ *etiam alias multoties à nobis observatum,*
“ *cum valida fit sanguinis ebullitio, &*
“ *copiosissimæ variolæ profiliunt, sine fe-*
“ *bris & symptomatum imminutione, tunc*
“ *pessimum imo lethale signum esse, si men-*
“ *strua*

*"strua extra periodi tempus erumpant, tales
"enim ægrotae vix unquam servantur."*

Though it seems to be doubtful whether it be owing to the menstrual discharge; for in this case the symptoms were all extremely bad, and the girl had treated herself very imprudently before he was called in, so that she would probably have died had the *menfes* not appeared—. It is a general rule never to inoculate, till we have reason to believe the distemper will be over before their appearance; and with a very good intent, because women, at that period, frequently complain of their head, loins, and other aches, which would be a troublesome as well additional and disagreeable circumstance. And yet it has so happened, that they have unseasonably appeared during the eruption without any ill convenience. VIOLANTE has known them to happen in the beginning of the natural *Small-Pox*, and
to

to continue to their maturation without any danger of miscarriage — He was not alarmed if labour itself came on, provided the hæmorrhage from the womb, or the discharge of the *lochia*, were natural, moderate, and easy. He owns, however, the pock was not so large and plump as usual, and that they scabbed sooner. MEAD is of the same sentiment; and I have myself seen some such cases, though they happen but rarely; and I am much inclined to believe women under these circumstances stand but a very precarious chance for their lives.

Hæmorrhages, by lessening the impetus and quantity of humors circulating through the arteries and veins, moderate the heat and fever, and by that means the greatest part of the symptoms which attend this distemper; but, if it be considered that the blood does not always acquire an inflammatory

tory spiffitude in the *Small-Pox*, but is sometimes so broken down as to flow from almost every vessel, it will evidently appear that such an hæmorrhage must generally prove fatal, at least be a most dangerous and frightful symptom. The vessels which secrete the urine are of such a diameter as easily to admit a passage to the blood upon the least dilatation, or when it is more than commonly broken down — and this is justly thought a bad symptom; nay, SYDENHAM pronounces it mortal. MEAD says he saw some recover; he however adds, that they who did were ever after afflicted with grievous complaints, such as boils, tumors of the subaxillary and parotid glands which will not easily suppurate, and very troublesome as well as scarce curable ulcers of the tonsils. SYDENHAM ascribed the purple spots and bloody urine to the fused state of the blood, which happened in consequence

sequence of its high inflammation; though it must be allowed that its viscidness is a much worse symptom in inflammations — but though he chiefly placed his hopes of recovery in the paucity of the pustules, and prognosticated the good or bad event of them from their number; yet he confesses himself to have seen purples and bloody urine when few or no pustules appeared, but this he concludes to have happened, because the patient died before the complete eruption. We are certainly to apprehend danger where there are a number of pustules about the time of suppuration, but from a variety of observations we are taught to expect danger, where though the pustules are not very numerous, yet hæmorrhages are brought on by the bad crasis of the blood; and still more so, if it issues from the lungs and brings on an *hæmoptosis*. — SYDENHAM declares this a mortal symptom, if
it

it be violent. In that species of *Small-Pox* which MEAD distinguished by the name of *sanguineus*, he thought it necessary to employ such medicines as by their styptic virtues, thicken the blood, and to keep it under as to prevent its breaking through the smallest arteries; such are the *Peruvian bark*, *alum*, and *spirit*, or what is called *oil*, of *vitriol*; he also directed some of the oil of *vitriol* to be given with the tincture of red roses, five or six spoonfuls at a time, especially where livid or black spots were intermixed with the pustules; and this he not only recommended in the *sanguineus*, but in every other species of the *Small-Pox* where the skin was greatly affected with the putrid pock; and he assures us he had saved many by this method. He farther observes that he found blisters of use even in this state, provided the *delirium* demanded it. SYDENHAM recommends

this oil of vitriol to be dropped in small beer, or some other thin and diluting liquors, to be given freely, even to the very full eruption of the *Small-Pox*, where these symptoms appeared or were apprehended; if they actually were present, he directed other astringents, with a view to brace and strengthen the broken crasis of the blood, such as *terra lemnia*, *bol. armen.* *lap. hæmatit.* *sang. dracon.* &c.

The variolous pimples, when the disease proves regular, rise gradually, and become inflamed; their tops then begin to grow white, their base still continuing red; which redness is imparted to all the skin round about. Hence, when the *Small-Pox* is very full, the entire skin between the pocks will be as red as a rose — this will produce a great uneasiness, and a very troublesome heat to the patient, as well as painful tension of the skin; but it is

a very good sign notwithstanding. — SYDENHAM therefore says, that, the milder and more genuine the *Small-Pox* are, so much the more will the pustules themselves and their intermediate spaces be of the colour just mentioned. If the disorder takes a bad turn, the intermediate spaces will grow pale; but, when the pocks are few and pretty distinct, the intermediate skin will not be red, but their bottoms will be encircled with a reddish border: this redness and tension of the skin, which is ever accompanied with a tumor greater or less, lasts till the pustules are well filled with matter; when this happens, the redness of the skin gradually lessens, the swelling subsides, and the uneasiness, which these symptoms occasioned, is removed. If the pock be very numerous on the face, the swelling will be considerable, the eye-lids will more especially be tumefied so as not to be drawn

drawn asunder, and the lips sometimes swell to an amazing degree. We may hence learn what accidents may happen, when the *Small-Pox*, attacking the *fauces*, cause all the neighbouring parts to swell. Deglutition, by this means, is frequently obstructed, and suffocation much to be feared — and hence it appears too that the regular generation of the *pus* is, in this case, made during the height of the inflammation, and agrees with *Hippocrates*, who says, “ *Circa*
“ *puris generationes dolores & febres*
“ *magis accidunt, quam pure facto;*” for, as soon as the pustules are become so many abscesses, all the symptoms of inflammation cease. The second state of the disease is that which begins when the eruptions appear, and end on their suppuration — And this state is not always of equal duration, no more than the state of contagion; for sometimes the *Small-Pox* may be epidemic,

yet mild and favourable, which soon ripen, dry, and scab off; sometimes it happens quite otherwise; for, if they be confluent, numerous, and small, the face will swell and inflame much sooner, but the suppuration will be protracted—. In the distinct sort the suppuration generally happens on the eighth day, which SYDENHAM for that reason considered as a very troublesome as well dangerous period. — This gave rise to the vulgar opinion, that, if the patient got over the ninth day, he was out of all danger; which, though it may be so in the mild and distinct sort, does not hold in the confluent, where danger may be apprehended after a much later date.

SYDENHAM, in that species of *Small-Pox* which he calls *anomalous*, observes, that a *salivation* sometimes, though but rarely, happened in the distinct, as well as in the confluent, pox. I have seen some such cases, but the disorder

disorder was always the worse throughout than might have been expected from so few in number; and which became black as they scabbed, and left very deep pits, which is seldom or ever the case when the *Small-Pox* are distinct, and few in number. — He farther observed that, when the *Small-Pox* prevailed much, the fever of that year, which is less general, plainly partakes of the same inflammatory nature therewith; so that both distempers begin after the same manner, and are attended with a great similarity of the most peculiar symptoms, as manifestly appears from the great tendency to spontaneous sweats, and the discharge of *saliva* in both, and they only differ in the eruption of the pustules. The repulsion of the humors, on account of the obstruction of the cutaneous vessels, is not always the cause of the spitting, but may arise from the evacuation of

part of the variolous matter by the excretory ducts of the salival glands. We know by experience that the salivation relieves the patient, and that he is greatly hurt by its suppression. Nature, by different means, attempts either entirely or partly to discharge the variolous matter from the body; and the physician, who is but her agent, ought, if he knows his own art, to give her every assistance in his power. Salivation therefore, and the swelling of the hands and feet, should be accounted as salutary means which nature employs towards the cure of this disease; an attention to these circumstances is of infinite import in practice; although we cannot satisfactorily account *à priori*, why the variolous matter, which if left would be highly prejudicial, should be carried off by these rather than by any other parts of the body.

The

The more injurious the disease becomes to the vital functions, so much the more dangerous will it be; the slighter the symptoms are in the beginning of it, so much the more favourable will be the event.

The slower the pustules are in coming out, and the longer the state of the contagion has been, so much milder will be the disease. This observation cannot be too often enforced, especially as a contrary opinion has long prevailed, and has been attended with great mischief, when every endeavour has been used to promote the eruption by a hot regimen; experience tells us that the *Small-Pox*, the sooner they are driven out, the more numerous and confluent will they prove. The pustules will be by so much the more favourable as they are fewest in number, distinct, large, and in such parts as are farthest from the face; first white, then yellow, and slow in their progress.

—If the *Small-Pox*, though few in number and distinct, should nevertheless be attended with untoward symptoms, there will be danger; especially if accompanied with an intolerable anxiety, and a prostration or loss of vital strength.

It is indubitably manifest, that the pustules, when the *Small-Pox* is distinct and favourable, are large and plump, but small when the disorder is of a more unpromising nature; physicians for this reason esteem this latter sort as a bad symptom, more particularly if they happen to be smooth and flat, rise little above the skin, and, though they do rise a little, yet are not pointed, but are a little pitted on the top; under these appearances I have ever found the disease dangerous; and as the patients grew better these pustules plumped up, and the little pits on their tops entirely went off. It is true that

FREIND

FREIND said we should estimate the event not only from the number of the pustules on the face, but from those on the rest of the body; it cannot however be denied, but that the danger is much greater when the face is attacked — for then we shall find a restlessness, head-ach, violent *deliriums*, the whole face swells and inflames, and the external parts consequently becoming less pervious, the blood will too forcibly press on the vessels of the brain. Besides, we seldom observe the face covered with the pustules, but we shall find the inside of the nostrils and fauces are so too; and, when the inward parts of the eyelids are also affected, there will be great reason to fear the loss of sight will follow. Nor is it an improbable conjecture to suppose the acrid and most volatile part of the variolous matter flies upward — The running ulcers on children's heads,
the

the pustules which occupy the lips and nostrils in vernal intermittent fevers, and many other such-like disorders, seem to support this opinion. I have known several who had a fever every spring, accompanied with an oppression and wheezing at the breast; pimples broke out in the face, which discharged a sharp lymph, which soon grew into yellow scabs; the fever went off, and so did the oppression. Other reasons engage us to believe the same happens in the *Small-Pox*; for ugly scars and unsightly pits are left, especially on the face, which seldom or ever happens in any other part of the body; when the pustules appear on the face and neck, all the symptoms become more tractable, though they afterwards break out much later on the body; all this proves that the great fulness of the *Small-Pox* on the face is owing to the quantity of acrid varicellous

lous matter, and is therefore the more dangerous. SYDENHAM, who very attentively observed this disease, declares that the event of the *Small-Pox* depended chiefly on the greater or less number of them in the face; if, says he, the face be covered with small pustules as thick as sand, and the rest of the body with a very few only, the patient will be in as much danger as if the whole body were equally as full—but, on the contrary, be the body ever so much covered with the pock, provided the face be clear, little or nothing is to be feared. Towards the decline of life, he was more and more confirmed in his opinion; and farther declares, that, when the physician observes the patient's face to be everywhere full of pustules in the beginning of the disease, as if covered with steel-dust, he may readily pronounce death, however seemingly well the patient

may

may feel himself, or appear to his attendants. I have frequently had opportunities in the course of my practice to experience the truth of this prognostic.

The more the pustules are charged with a gangrenous ichor, the worse most assuredly will be the disease.

We are always to expect an unfavourable event, when the variolous matter degenerates from a good to a bad sort, although it contain no gangrenous ichor. ERAND greatly disliked the *crystalline, filiquose, and verrucose* pook. — RHAZES knew those last, and condemned them as a mortal kind — especially if the disease grew worse after the eruption. They however seldom occur; I have had an opportunity to see them twice, attended with the most dreadful symptoms, and death at last; they were of the distinct kind, and the eruption came out gradually, on the fifth day in one of the patients,

patients, and on the seventh in the other. SYDENHAM always esteemed it a most fatal symptom when in the very height of the distemper the intermediate spaces of the pock became pale and white; this, when it does happen, generally is on the eighth day in the *distinct*, and on the eleventh in the *confluent* sort: perspiration, which used to be free and easy, in grown persons in the *distinct* sort, becomes suddenly stopped, a great anxiety follows, a *delirium*, a frequent but small discharge of urine, and, in a few hours after, death, though the physicians and attendants will have foreseen no such unfavourable event. The like happens on the eleventh day of the *confluent*; the salivation suddenly stops; the face, which was before much swelled, sinks at once; the saliva, which heretofore was thin enough to be easily discharged, now becomes thick and viscid, and adheres to the fauces, prevents deglutition, the voice is hoarse;
some

sometimes a violent phrenzy comes on, at other times a *stupor*, and, at length, death; these sudden and melancholy events are the more to be apprehended where a hot regimen has been administered, and the patients are almost stifled with cloths, by which the blood is rendered too sily and viscid, by being deprived of its watery serum by the too profuse sweats —.

SYDENHAM observes that a considerable swelling of the hands is of such infinite consequence, that he declares he has known many a person, by this fortunate circumstance, snatched, as it were, from the jaws of death — for as the face is very much swelled till the inflamed pustules come to perfect supuration, and the suppuration comes on slower in the extremities; that is, when they begin to dry and scab on the face; it is evident that this tumor of the hands and feet must be a desirable symptom, because it proves the vital strength

strength to be sufficiently capable to change the morbid matter into a laudable *pus*, and that there is no fear of a mortification.

As the humors in this disease, especially if *confluent*, are much disposed to putrefaction, great attention should be given to the diet — that it be of such a nature as to resist this putrescence. SYDENHAM absolutely forbade flesh-meat, eggs, nay, even broths made of meat, but recommended boiled apples, barley-water, gruel, &c. RHAZES allowed meat, and even calves-feet jellies; but he advises their being mixed with the juice of unripe grapes, and would have his patients eat four oranges; he condemned milk, as it contained butter, which was rancid; and a cheesy substance that soon became putrid; thin butter, milk-whey, and the juice of citrons were strongly recommended by him. Since suppuration is always attended with a fever, it will appear
how

how necessary it is, that the drink should be emollient and diluent, so that the stimulus may not be increased.

SYDENHAM, when he apprehended a dangerous hæmorrhage would come on, immediately had recourse to *spirit vitriol*. mixed with diluting liquors — but, when no great fusion of blood was feared, he contented himself with vegetable acids — for he considered the *Small-Pox* as a disease nearly allied to the acute and inflammatory disorders. We should not give children at the breast, or those whose diet is chiefly milk, any acids, more especially of the strong kind, for fear of bringing on coagulations in the stomach and bowels, which might be productive of a deal of mischief.

Whilst we use our utmost endeavours to drive the attenuated variolous matter out of the body, and so to diminish the number of suppurating pustules, we should,

should, at the same time, do all we can to invite them upon such parts of the body as are least dangerous — that it is so where the face is entirely covered with them we are all of us aware of; and for this reason we foment the lower parts, and apply blisters to them, that the variolous matter may be diverted from the face and trunk of the body — Practical observations confirm the usefulness of this method. Persons who have an issue will frequently perceive the variolous matter discharge itself in much greater abundance from the wound than it would have done at any other time. Anodynes and opiates should never be given but where the violence of the disorder requires it — these are necessary at the time of supuration when the skin, entirely covered with pustules, is much inflamed and stretched — and brings on great restlessness and want of sleep.

SYDENHAM administered opiates only to grown persons; he seldom gave them to children, because they slept more composed, and were less feverish; besides, they would check the *diarrhæa*, which is of so much service to them at the beginning of the disorder — if however they were seized with a *delirium*, or that the pustules were of a bad sort, he never hesitated about giving an opiate; this he did after the full eruption to the end of the disease. He used a liquid laudanum of his own; sometimes the *syr. c. meconio*; and this he accounted safer, as it did not heat too much. Liquid laudanum may be prepared without the addition of aromatics. It is well known that the symptoms in general grow worse towards night, and more especially a great anxiety of mind and body; it will therefore be proper to administer such a medicine as is most likely to calm these disturbances

bances about five in the evening; nay, I have often thought them proper at three in the afternoon, when the symptoms have been very much encreased on the preceding day. — When the efficacy of the medicine is off, which generally happens in six or eight hours after, if the complaints return it may be repeated —

SYDENHAM sometimes found it necessary towards the close of the *Small-Pox*, even if they were of the confluent sort, to prescribe a narcotic every eight hours; he therefore chose to have that medicine always in readiness, to be given upon any emergency, being persuaded that many persons have died for want of it.

I can assert it with truth, that I have ever, in a long and extensive practice, found opiates of great use in the *Small-Pox*; which the farther evidence of many living and ingenious medical witnesses will testify — The

indeed occasion costiveness, but this inconvenience is easily removed by clysters and emollient drinks of whey, with tamarinds, &c. — for I entirely agree with the very celebrated Dr. SIMPSON, that an obstinate constipation of the bowels in this disease is highly injurious. The first sign of suppuration appears on the tops of the pustules, which grow white, whilst the bases and the surrounding skin retain their redness: this whiteness gradually increases; and, if they be of the *distinct* sort, this will have the pleasing appearance of so many round pearls. In about twenty-four hours these white pustules become yellowish, and the redness of the surrounding skin sensibly goes off; this yellowness gradually turns browner, till it becomes entirely so; they then presently scab and fall off from the face, quite whole, unless they be broken by having been rubbed

rubbed — in the hands and feet, however, they generally break before they dry and fall off. In the *confluent* the whole face is covered with pustules; hence when they suppurate the face appears to be covered with a white pellicle; this whiteness appears sooner than it does in the *distinct*, and, in a very little after, turns brown, then black, dries, and scabs off in scales. But, in the very worst sort, instead of a purulent matter, we find a gangrenous *ichor*; in that case the face is covered with a dark brown colour, without any whiteness having preceded.

If perspiration be impeded, mischief will ensue; for we find even persons in health will feel the bad effects of an obstruction of that sort, when such humors are left in the body which ought to have passed by the *vasa exhalantia*. Now if we consider that, by this obstruction of perspiration, the

effluvia (the existence of which is pretty evident from the filthy smell of the chamber as well as the dispersion of the infection) which ought to evaporate, are retained, we shall have great reason to expect some dangerous consequence. Besides, if the pure *pus* collected in the pustules cannot find a free passage towards the outward surface, it will be re-absorbed by the veins, and mix with the other humors, and bring on a purulent *cacochymia* of the blood and many other evils. It is well known that this variolous *pus*, though it seems thick, may be re-absorbed, and, when dry, congeal into a hard humor: and there is great danger when a large quantity of *pus* is re-absorbed. Now if it be considered that in the *distinct* sort, if numerous, or more particularly in the *confluent*, the entire skin becomes dry as parchment; and that the collection
of

of *pus* continually lodged under it, which by its retention, and by the heat of the fever, is rendered much sharper and thicker, and so more easily fitted for re-absorption, we shall easily see why in this case we are to expect a fever of the most malignant and dangerous consequence, which most frequently is the forerunner of death.

The *secondary fever* attends the last stage of this disease, and is always to be suspected, and is indeed much feared by all physicians. — It is about this time that so many die in the confluent *Small-Pox* on the twenty-fourth day, though sometimes later; the mass of humors of the whole body being entirely corrupted, and several parts mutilated and scarred before death, just as the corrosive matter by its direful translation attacks one or other of them. I have known both the eyes destroyed in a few hours, and the nose

as suddenly eaten away, and many other such unhappy events, before death kindly put an end to such complicated misery. The more acrid the *pus* is, the longer it has circulated with the humors, the more violent the fever has been, the greater will be the cause of apprehension. The difference will much depend upon the different parts affected by the purulent matter; if it be the brain, the patient dies delirious; if the breast, a sudden suffocation will happen; if the lungs, an incurable consumption; in case the stomach and bowels be engaged, a vomiting and grievous dysentery will ensue. I saw an hepatitis and jaundice after a bad *confluent Small-Pox*; a fetid *diarrhœa* did some service; but a dropsy followed, from which the patient, with some difficulty, recovered, but dragged a very uncomfortable life ever after.

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We may expect a more favourable event when the variolous re-absorbed *pus* is translated towards the external surface of the body, and upon the limbs — and even in that case the poor patients often purchase their lives at the expence of very disagreeable distempers: I saw a stout young man with an incurable *anchylosis* on both his elbows in consequence of this disease; the like misfortune in both his knees. I have frequently known sinuous ulcers to happen in the fleshy parts of the arms and legs, which were with difficulty healed; painful and many carbuncles, arising from the same cause, are found to be very troublesome, but, after they are cured, leave very little vestiges of mischief behind them. SYDENHAM much regretted that the few who escaped the very worst sort of *confluent pock* were seized with most excruciating pains in their limbs; the afflicted parts tumefied,

tumefied, and frequently suppurated, become large sinuous ulcers, and were highly dangerous. MORTON hence sensibly observes, that no determinate number of days can be fixed in the malignant *Small-Pox*, which may ascertain their last period or state of declination; for, though the disease itself may have accurately enough performed its stages, yet this cannot be the case when it terminates into quite another disease. He therefore always esteemed it a very suspicious symptom, when the patient, after the *Small-Pox* dried and scabbed off, had no inclination for food, and complained of an hectic heat; for in that case some one or other of the above recited consequences would follow.

The whole face, in the very worst sort of *confluent Small-Pox*, is, as it were, covered over with one piece of parchment, which, as it dries, becomes black,

black, and adheres closely to the skin, which is continually eaten away by the sharp and corrosive *ichor*. As these scabs, moistened by emollient fomentations, fall off, a glewy sort of liquid will ooze from the corroded skin, which, soon becoming thick, forms a fresh scab, under which the erosion becomes deeper. It so happens that the *ichor*, thus re-absorbed by the veins, will make itself a passage through these corroded vessels of the skin, and frees the internal parts from this efflux of acrid matter; but the skin will be entirely destroyed, and nothing now remains but a most unseemly sight of scars, and most shocking and deep-furrowed seams. The bones frequently become carious in this disease. AMBROSE PARE saw the *os sterni*, the bones of the arms and thighs, eaten away by a dreadful caries, and quite broken; he farther observed the heel, joints

joints of the hands and feet, the nose, eyes, and other parts of the body entirely destroyed by the *Small-Pox*.

If the firm and solid parts may be so destroyed by this acrid matter, surely the softer parts will much sooner, and more readily, run into a putrescent state from the same cause; more especially if a free access of air and a perpetual moisture of the affected part happen to concur. Many very melancholy evils have been the result of this, in the mouth, *fauces*, &c.

Now, if we consider that this sharp and acrid humor may be deposited upon all or any part of the human body, we shall easily understand how various and scarce curable diseases may succeed. I shall only give the following extraordinary case in proof of the whole. A girl, eight years old, attacked with the worst sort of *confluent Small-Pox*, complained of a difficulty of breathing

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on the sixth day, which greatly increased on the eighth; at length a tumor appeared in the throat, which suddenly enlarged; when it was pressed with the hand, it gave way and grew less, but, the moment the pressure was taken off, it grew larger, and the flexible skin of the throat at length became so enlarged, that, hanging down below the chin, it looked like the turgid craw of a pigeon. The girl died about the tenth day; the swelling subsided after death. — The physician, in order to investigate the cause of this protuberance, on opening of the body, found the space between the seventh and eighth annular cartilage of the *aspera arteria* eaten away; this easily accounted how the inspired air, intruding itself into the cellular membrane of the throat, might occasion this *emphysema*, or windy tumor.

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These melancholy evils happen chiefly, because the variolous matter, re-absorbed by the vessels, and carried with it into the circulation, perpetually contracts an acrimony, and often such a malignity as to destroy all the parts it comes near or is deposited upon. And, the more impetuous the fever is, the more and sooner will this *pus* be corrupted. The curative indication therefore will be fourfold. First, That a free passage may be obtained, so that this variolous matter may be carried to the external surface. Secondly, That the *pus* already absorbed, be expelled. Thirdly, That the putrefaction of the humors, in this case much to be apprehended, be guarded against, or, if already begun, removed as soon as it is possible. Fourthly, That the fever be kept in its due bounds.

To preserve the softness and laxity of the skin conduces more than any thing

thing towards answering the first indication — to this purpose physicians direct warm emollient fomentations to the face, hands, and feet; that so the parts, by being moistened and relaxed, a free passage be given to the *pus*. This is indeed a troublesome office to the persons who attend the patient, but the ease it affords will very amply make amends for the trouble. SYDENHAM observed, that in the very bad *confluent*, soon the scabs dried in such a manner, especially on the face, that they adhered almost to the very flesh, and that they could scarcely be brought to separate —. The *pus* cannot then have a free passage through the cutaneous pores, which is almost as dry and as hard as a piece of leather; hence it corrodes the parts it lodges under, is re-absorbed in large quantities, and produces very dreadful effects. These repeated fomentations will, in some measure, prevent their incrustation,

incrustation, and, if it be already begun, conduce much to soften them. I have often directed these scabs to be anointed with fresh cream, and then to be fomented often with a warm emollient decoction, till they decay, as it were, and fall off; and I have seen, upon their scaling away, a large quantity of *pus* continually discharging itself by the skin; which led me to be assured that not only the *pus* which lay under the skin, but that a part of even what had been absorbed passed off by the same ways, to the manifest benefit of the patient. And I can, with justice, declare, that I have, by this method, saved many who were thought in a desperate condition, both by myself as well as those who attended along with me. We have a very remarkable case of such a cure related by Dr. MEAD, of a very robust healthy young man who was seized with the
confluent

confluent Small-Pox, of the very worst sort; his face about the time of maturation became black, dry, and turning to a mortification: every thing wearing the appearance of despair; he ordered the skin to be every-where cicatrised down to the sound flesh, and fomented with a decoction of the warm emollient herbs, mixed with camphorated spirits of wine, upon account of the putrid smell of the *pus*, which was so offensive that none of the servants could well bear it. The patient recovered, though his face ever after remained greatly disfigured by the scars—. When these scabs are removed the parts underneath will be raw and painful, and, unless care be taken to prevent the humors from drying, they will re-incrustate. It will therefore be necessary to cover the whole face with a soft plaster, and to treat it as an open ulcer. I have known a per-

fect mask, as it were, fall off the face of a young man, and, by the care of a surgeon, the ulcerated skin, after a large discharge for many days, so happily cured, that a much less deformity ensued than what was expected: the skin, indeed, was marked with a large number of small pits, but every-where equally, without scars, or deeply furrowed seams.

As a frequent repetition, however, of the fomentation may prevent the patient's sleeping, or awaken him when asleep, it might probably answer full as well, if after having fomented all the day long, plasters were laid on at night, especially on those places which are fullest, and the incrustation of the pock thickest. I never found the least inconvenience from the application of the plasters; nay, I have often observed the maturation come on sooner and better, when,

when, in order to draw the humors to the extremities, they have, by my directions, after having been well bathed, been covered with melilot plasters, which smell agreeably enough, and so could not be offensive to delicate people. It is well known that the pustules on the extremities are plump with *pus* when those on the face are drying and scabbing off; the melilot plaster hastens suppuration. Surgeons are well acquainted that plasters mollify, as well as take off, the inflammatory tension of the skin. Dr. SUTHERLAND very strongly recommends this method, as soon as the suppuration begins; he even would have the whole body rolled up in these plasters, and gives us one or two cases in which they were of infinite use.

As the natural, and therefore salutary, discharge of the *pus* should be

on the external surface, would it not rather be advisable, as soon as the pustules swell with the variolous well-concocted *pus*, to cut them open, as the *Arabians* are accustomed to do?

I have often remarked, that the more prominent and large pocks in general leave fewer and less deep pits in the skin, than those which are flat and broad; for they, as it were, hide themselves deep into the skin, which they eat into — and I have frequently seen the skin puffed up and red in the distinct *Small-Pox*, after the scabbing of the pustules, nevertheless far from injured by them; and this prominence and redness will go off in a few weeks, and sooner sometimes, if the patients will but confine themselves at home, nor expose themselves to the cold air.

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It is the duty of every physician to watch nature, and to see by what means or outlet she intends to throw off the morbid matter so as that the event may be favourable; this he is to imitate as nearly as he can. — We know that in the *Small-Pox* the variolous matter is naturally driven towards the external surface; we are therefore to pursue that course, as far as we are able; and this may be effected by wine and cordial medicines. — But this, however, should be done with caution; since we know that the whole body is inclosed, as it were, in one crust, and, where it is not, is yet greatly inflamed however, and will let no *pus* pass off. — Now, if in consequence of these cordials the acrid matter be so agitated by the motion of the humors and heat as to be denied a passage through the hardened skin, we are to fear

something wrong would follow, unless it can be discharged by other outlets, or be deposited where it can be least hurtful. SYDENHAM observes that a salivation is so constant a concomitant of the *confluent Small-Pox*, that he never remembered but one instance where it failed; this spitting sometimes attends the eruption; at others it appears in a day or two after. It is thin at the first, and is discharged in great quantities; but it afterwards thickens, and, about the eleventh day, is so viscid as to be with difficulty spit up. Although at first there seems to be a greater secretion of *saliva*, because the entire skin of the face is so inflamed as not to transmit the humors, and the still pervious vessels of the salival glands therefore are more pressed upon; yet in the course of the disease it appears very probable that a part of the variolous matter

matter is thrown out with the *saliva*, since its continuance affords great ease, and its suppression is attended with dangerous consequences. SYDENHAM observing that the salivation generally became less, even sometimes ceased, on the eleventh day of the *confluent Pox*, he immediately applied a large and pretty sharp vesicatory to the neck, so that it might rise before the eleventh, a day of the utmost consequence, and carry off the peccant matter — which otherwise destroyed many, unless the salivation, or some other discharge were promoted. He farther observes that the danger was less if the swelling of the face did not subside at once, and that the hands began to puff up pretty much, because the variolous matter, which passed off by salivation, is for the present driven to these parts. SYDENHAM placed so

much confidence in this swelling of the hands, that, when it did not come on or sunk too suddenly, he knew death would follow; but when the salivation ceased, the face subsided gently, but not entirely, and the hands tumefied, he doubted not a happy issue of the disease — sometimes a swelling of the feet is of equal good consequence. Thus we see what favourable events we are to expect from a translation of the variolous *pus* on the extremities. It is, however, universally agreed that it is better and safer to promote the evacuation than a translation of the variolous matter; for from this last fresh evils may arise in those parts upon which it may be driven; besides we are not always secure, because it may be driven to some noble part, and so endanger life.

SYDENHAM always endeavoured to imitate the spontaneous efforts of nature

ture when he observed them salutary; and therefore directed three or four purges when the pustules dried and fell off, and the patient gathered strength, that so the morbid matter might be carried off, which, if left, might otherwise produce mischievous disorders — and, in his treatise written just before he died, he strongly recommends purges in the secondary fever, which he properly enough calls putrid, and to be occasionally repeated; but always gave an anodyne at night, according to his usual method, in order to prevent the emotions occasioned by them — he did not, however, administer purges but when the body was very costive, and the fever ran so very high, that the patient seemed to be in imminent danger; it was then he judged it highly necessary, as well as to administer a brisk dose of the emetic wine, when

when the spitting was suddenly checked on the eleventh day, and threatened immediate death.

But it was principally Dr. FREIND who strongly espoused purging in this period of the disease, and proved, by a variety of cases, how usefully it was administered, even where nothing but a fatal event was expected. He gave gentle purgatives, such as senna, manna, &c. and those in small doses only, lest, by too great and sudden evacuation, the patient might be too much enfeebled: he proceeded in this manner, till the dangerous symptoms were removed — which, in consequence of very fetid stools, happened much sooner than he could have otherwise expected: he proves this was the practice with the *Arabian* physicians; and afterwards adopted by FERNELIUS and other learned men in the profession. MEAD entered into the
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the same practice — he observes, however, that we should cautiously examine whether *pus* be not collected under the dry and scabby pustules; if there was, there would then be no occasion for purges, but that the *pus* should be discharged by some other mean. HUXHAM declares nothing to have succeeded more happily in the cure of this secondary fever than repeated cathartics, now and then a dose of *calomel*, and at night an anodyne; and this he experienced in his own family, as well as in a variety of other cases. I can confirm all these opinions by my own experience — for, as I observed, a spontaneous *diarrhœa* of so much use, when the pock was drying, and that most fetidly nauseous stools were carried off by mild eccoprotics with visible advantage, I never hesitated to order them; neither did I ever find
reason

reason to repent it. We frequently find persons who have recovered from the *Small-Pox* stupid and heavy, in consequence most probably of the opiates which were necessarily given in the course of the disease — and this will be best removed by frequent gentle purgation.

We are well assured that many things pass off with the urine, which, if retained, would greatly injure the body; we are therefore not to be surprized that physicians remarked the evacuation of the morbid matter by this channel. MORTON saw a large and very profuse discharge of limpid urine succeed a salivation, which stopped too suddenly, and that so successfully, as to find the fever, difficulty of breathing, oppression, and every other direful symptom most wonderfully relieved by it. LOBB observes the same thing, and farther
avers,

avers, that, on the decline of the disease, and those days on which purges were not administered, he recommended mild diuretics. I have myself observed a copious discharge of urine attended with much good in the *distinct Small-Pox*, though they were pretty full, from the eighth day to the eleventh; and I was much surprized the discharge appeared periodical, *viz.* from seven in the evening till twelve, and very little afterwards. We must be careful, however, to give such diuretics as are not too forcing, which would rather weaken the patient too much: diluting liquors, such as whey, or milk and water mixed together, in proportion of one to three, will very well answer this purpose.

SYDENHAM, to answer the third curative indication, recommends such things as will counteract the putrescent disposition

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disposition of the humors, and these have already been mentioned — fresh air, often let in, will, in this case conduce much, by driving the foul putrid effluvia out of the chamber to which the sick are confined; and be it here observed by the bye, how absurd and abominable the custom is of permitting many persons labouring under this disease to remain together in the same room; a circumstance which has destroyed many poor people who had it not in their power to prevent such a nuisance. We see in hospitals filled with patients, that diseases become worse and worse, because they are surrounded with a putrid air; that wounds will not heal so kindly; and that even those in health, who are obliged to attend upon them, are often seized with fevers of the most malignant kind, and which frequently prove infectious at the same time.

time. The same reason also will induce us, in the strongest manner, to recommend the frequent shifting of linen, which would otherwise become stiff and uneasy with the matured *pus* and other perhaps worse humors of the *confluent pox*, and pregnant with intolerable stench, inso-much as to be not only disagreeable to the patient, but to all such as are obliged to give their attendance. The linen should be first fumigated with amber, olibanum, mastich, myrrh, &c. so as to take away the smell of the soap, and put on as expeditiously as possible to prevent the danger of cold. Sometimes we meet with such a putrescence as can scarce be checked. In this case we find that SYDENHAM gave *spirit of vitriol* in small beer, and ordered it to be freely drank, which answered surprizingly well: “ This
“ spirit, he says, as if it were truly
“ a spe-

“ a specific in this disease, wonder-
“ fully abated all the symptoms ; the
“ face swelled earlier, and in a greater
“ degree ; the spaces between the
“ eruptions inclined more to a bright
“ red colour, like that of a damask
“ rose ; the smallest pustules also be-
“ came as large as this kind would
“ allow ; and those which had other-
“ wise been black discharged a yel-
“ low matter resembling a honey-
“ comb ; the face, instead of being
“ black, appeared every-where of a
“ deep yellow ; lastly, the eruptions
“ came sooner to suppuration, and
“ ran through all their stages a day
“ or two sooner than usual. In this
“ manner did the disease proceed,
“ provided the patient drank freely
“ of the liquor recommended ; so
“ that, when I found there was not
“ enough of it drank to take off the
“ symptoms, I exhibited some drops
“ of

“ of the *spirit of vitriol* between whites
“ in a spoonful of some syrup, or a
“ mixture of some distilled water and
“ syrup, in order to make amends for
“ the sparing use of the above-men-
“ tioned liquor.” He proceeds, “ I
“ have now enumerated the many ad-
“ vantages of this medicine, and in-
“ deed I have not hitherto found the
“ least inconvenience from its use.”

As the great efficacy of the *Peruvian bark* is so well known at present in checking mortifications, and its antiseptic qualities so evidently established by the experiments of the very ingenious Sir JOHN PRINGLE, which prove that it not only prevented a gangrene, but did it infinite service when it was already begun, it will not surely be improper to give it a fair and candid trial in the *Small-Pox*.

MORTON, it is well known, gave the *bark* pretty freely, and he not only prescribed, but approved of it also, in the *Small-Pox*; however, as he was not at all acquainted with its antiseptic virtue, he gave it in the fever which happens at the time of maturation, when he observed its frequent access and remission, though this, he confesses, was but seldom; he administered the *bark* during the intermission, which, in two or three days, carried off the fever entirely, and the pocks quickly matured, as they do in the most distinct kind.

MONRO, observing the *bark* of so much use in the treating of mortifications by bringing on a laudable *pus*, concluded it would be of infinite service in the cure of the *Small-Pox*, of the worst sort; and he very happily found it fully to answer his expectations; for the empty pustules filled,

filled, the thin putrid *sanies* became white, and thickened into a good consistence; the *petechiæ* gradually became pale, and at length disappeared; the pock dried much sooner; he gave from ten to forty grains in substance in different forms as best suited his patients; to young people who could not well take it by the mouth, having previously emptied their bowels, he gave a clyster, consisting of a half drachm to two drachms of the *bark* with a little warm milk, and syrup of diascordium. He very honestly confesses, that the *bark* was hurtful where the lungs were too much stuffed up; and adds, that all he expected from it, in this case, was a kindly concoction of the morbid matter, by producing a favourable supuration. HUXHAM entertained the same favourable sentiments for this medicine, but cautions us not to give

it where the abdomen is hard or swelled —.

To keep the fever within its due bounds, and neither to suffer it to rise too high, or to sink too low, is the business of the fourth indication — and this is certainly effected by the prudent use of opiates. — SYDENHAM, however, who was pretty liberal in his administration of them, confesses they sometimes did not sufficiently answer that intention, and that he was obliged to have recourse to the lancet, to expose the patient to the open air, especially when at this critical juncture he apprehended a *phrenitis* coming on — at the decline of life, and taught by long experience, he asserted that this *secondary* fever was a disorder which was entirely unconnected with the *Small-Pox*, as well as with the fever that preceded the eruption — and that nothing could so properly, or so efficaciously,

ciously, stop its progress as copious bleeding; and candidly owns opiates in that case will not alone answer the purpose.

Others again are against bleeding: LOBB was of opinion the secondary fever might be removed by other methods, disapproving venesection absolutely, unless there was a *plethora*; now in this instance there can be no such thing, for a *plethora* implies a healthy diathesis of the blood, which at present is morbid. — The humors, however, may be too abounding; the vessels may be so much distended, as the blood begins to adhere to the narrow extremes, that great and sudden ills may be expected, particularly in the brain and lungs. — Surely when we feel the pulse quick, full, and hard, the carotid arteries become strong, and see a delirium coming on, or an oppression of the lungs, we are well authorized to use the lancet, and that

with freedom too — experience teaches us, that a copious bleeding at the nose, a large discharge of the *menfes*, a flux of the *lochia*, have greatly lessened the impetus of this secondary fever, and preserved the patient from the very jaws of death. And why should not *art* imitate the useful efforts of *nature*? and the more especially, as without such a critical evacuation nothing but immediate death can possibly be expected. The moderate use of wine is allowable when the strength is almost exhausted, and where the pulse is weak and languid; but will be hurtful when the *fauces* and *æfophagus*, where the disorder is of a bad sort, are full of pustules, which fall off in those parts much sooner than they do upon the external surface, because of the sharpness of the pure wine. Under these circumstances it will be best to give it well diluted with barley-water, &c. with some addition

dition of sugar, slices of lemon, &c. this will refresh and recruit the spirits, and prove a very palatable antiseptic. Wine-whey is a very delicious beverage, and many such may be contrived by the physician, composed of cherries, strawberries, apples, &c.

Nurses should take care children do not lie on their backs, but change sides now and then; I have known convulsions happen in consequence of this neglect.

I once saw a swelling of the inguinal glands in a boy confined by the *confluent Small-Pox*, about the time of maturation. He happily recovered, and the swelling also spontaneously went off —.

SYDENHAM takes notice of a suppression of urine in young people, both in the beginning as well as towards the decline of the *distinct Small-Pox*; and confesses, that, after having

made use of every diuretic, nothing succeeded so well as taking the patient out of bed, and making him walk about the chamber two or three times, supported by a couple of servants; this brought on a copious discharge of urine: I have known a clyster produce the same effect — and MEAD recommends GLAUBER's salt, as both promoting stools and urine. Bloody urine is always a dangerous symptom, as it indicates a great sharpness in, as well as a broken state of, the blood. HOFFMAN in this case approved of whey and butter-milk in preference to any other medicines, however well contrived. It is certain they take off the acrimony of the blood, and prevent its putrefaction; but the *crasis* of the blood is sometimes so broken down as to render more efficacious medicines more necessary. When neither copious
and

and repeated bleeding, strong styptics, nor paretics, have answered the purpose, forty drops of *öl. vitriol.* given in a proper vehicle, and the dose again repeated in about half an hour after, have immediately checked the hæmorrhage; the patient sensibly fell into a sleep without any fever, and gradually recovered; but declared at the same time, that the pain and anxiety he underwent from the medicine was so acute and intolerable, that he would rather die than undergo the like again. *Ophthalmics* are very dangerous after the *Small-Pox*, and, unless timely relieved by bleeding, antiphlogistic purges, and cool emollient *collyria*, occasion incurable blindness —.

Physicians, who consult their own reputation, know that this disease, however favourable it may appear, is not without its danger. — About the
time

time of eruption therefore, they very carefully attend to see whether all the symptoms which appeared in the first stage of it cease or grow less, or whether any new ones occur. Thus a *delirium* often accompanies the beginning of the disease; if it disappears on the eruption, there will be nothing to fear, since it was occasioned by the violence of the fever; but, should it either continue or return, we are then sure the pustules have seized on the *meninges*, and, if they be numerous, threaten a great deal of danger. — Whenever I observed an intense pain of the head and a want of sleep, in the first period of this disease, I always suspected that a *delirium* would follow, though it were ever so slight. — If a hoarseness, difficulty of breathing, and a great anxiety happen after the eruption, we shall have reason to fear the
lungs

lungs are affected also by the pustules; and, should they tumefy, as well as the face, about the time of suppuration, a sudden peripneumony would come on, and death in a very few hours after.

The celebrated BOERHAAVE advises every thing to be done at the first, to prevent the bad consequences which might otherwise arise in the course of the disease. He therefore prescribed the antiphlogistic method, in order to guard not only against too hasty a suppuration from the too great number of pustules, but against what is much worse, the mortification; he endeavoured also by every possible mean to divert the pock from the upper parts to the extremities. BOERHAAVE just cursorily says, that from various accounts it appears INOCULATION was practised in *Greece* and *Asia* with very little danger — in *ENGLAND* with great success; he

he would not, however, venture to determine upon it without farther experience. He never, to my knowledge, advised it to any one at *Leyden* or in any other part of *Holland*; nor do I remember ever to have heard it was practised as long as he lived; but was undertaken about eighteen years after his death.

The following arguments in favour of INOCULATION are these; men of credit and undoubted authority assert, that very few die of it, and that many on the contrary die of the natural *Small-Pox*; that the pock from INOCULATION is always mild, and by no means dangerous; does not spoil the beauties of the face; that *ophthalmias*, *boils*, and other disorders which happen in the different parts of the body by the translation of the matter, are by this method prevented; and that the secondary fever, which ever attends the

the natural *Small-Pox*, is intirely unknown in INOCULATION: the physician likewise may chuse at what age or season he would inoculate—the infection may be given to a person in sound and perfect health; or, if he be in any shape disordered, it may be removed, and the body be well prepared to receive the *Small-Pox*; people are farther freed from their apprehensions of being attacked at a time when the disease is *epidemic*, or at a time when they may still have some dregs of another disease about them; moreover by inoculation, with a little trouble and less danger, we shall be insured from any future fears about this disagreeable as well as dangerous disease; since the ingenious Dr. MATY asserts, from experiments he not only tried upon others but upon himself, that there can be no danger of having the *Small-Pox* twice. These are many
and

and great advantages, I must confess; but I thought it of too much consequence to decide upon the question without attentively considering every circumstance: and first I judged it necessary to enquire what numbers died or recovered from the *natural Small-Pox*.

In the military academy at *Neustadt* in *Austria*, where none but adults are admitted, I found that in the space of eight years thirty fell ill with the *Small-Pox*, of which only one died.

In another military school, situated in the suburbs of *Vienna*, which admits none but young gentlemen of six or seven years old; from the winter solstice 1756 to the winter solstice following seventy had the *Small-Pox*, and all of them recovered.

In the *Theresian* college the number of those who had the *Small-Pox*, from the 23d of November 1749 to 1765, amounted

amounted to sixty-one — one only died, who unfortunately was my own son.

In the hospital at *Vienna*, in the year 1759, fifty-nine were laid up with the *Small-Pox*; only two died, and they were ill with the rickets before they were seized.

In the Orphan-house, in the year 1757, twenty-seven had the *Small-Pox*, of which two died; towards the end of 1759, and about the beginning of the year 1760, eighteen were confined by the *Small-Pox*, and only one girl died on the eighth day, who, long before the attack, had a livid swelling on her upper lip, which, upon the suppuration of the pustules, became gangrenous, and so prevented her taking either food or medicines —.

In 1759, thirty persons had the *Small-Pox* in the alms-house in the suburbs of *Vienna*, and every one of them recovered.

During

During the four months that the *Small-Pox* was epidemic in the *Posnamian* hospital at *Vienna*, fifty-seven were seized with them (of whom many were in imminent danger) yet they all recovered. In two boys and one girl, who all had the *distinct* sort, the fever did not abate as usual on the fourth day; on the sixth day they became extremely low, had a difficulty of breathing and a *delirium*; on the seventh there was an appearance of the *purples*; the pustules nevertheless rose, favourably filled with a well-coloured *pus*; the children still continued weak, but the *delirium* and oppression left them; on the seventeenth day the fever went off and they recovered; neither did any other bad consequences happen to any of the rest.

It appears then from what has been said that seven died out of three hundred and fifty-five — that is, as one to fifty.

fifty. Now, if we remember that three of the patients cannot properly be said to have died of the *Small-Pox*, we shall find it to stand as one to eighty-nine.

From what has been premised we shall see that the difference in these places, at least of those who die by INOCULATION or by the *natural Small-Pox*, is not so great as it is asserted; and, since the physicians were enabled to preserve so many, it would rather seem cruel to introduce a disease which is not free from danger, and many, perhaps, may intirely escape from, or avoid for many years —.

I have observed before that the variolous infection affects different men in different ways, according as the body is predisposed — the matter of the *confluent Small-Pox* will, upon INOCULATION, produce a mild sort; and we know that the contrary will some-

times happen. The very learned GAUBIUS, with all his skill, could not prevent a patient of his, who had always been of a very healthy constitution, from having the *confluent* sort, attended with very troublesome boils, though he was *inoculated* with the most benign *pox*, in the *spring*, and after a very regular and careful preparation. He candidly and very sensibly observes, that this instance ought to deter us from asserting, that INOCULATION is never attended with a *secondary fever*, or succeeded by any other bad consequences. This observation is farther confirmed by the cases of two brothers, the elder of whom was, in consequence of INOCULATION, particularly afflicted with terrible disorders, &c.

We may I presume hence fairly conclude that the *Small-Pox* does not always turn out favourably after INOCULATION; and, that when they have

even been completely over, many other diseases have succeeded —.

KIRKPATRICK, who was a great advocate for INOCULATION, gives us three cases, in which it was very far from succeeding so well as he could wish.

I have somewhere in this chapter endeavoured to prove that the variolous contagion will produce the *Small-Pox*, and no other disease. But I have known an instance where INOCULATION brought on a fever, and yet no *Small-Pox* ensued — the habit of body at that time not being fitted to receive the infection; and the human body indeed is not always equally disposed to admit the variolous contagion. I have seen many who boldly exposed themselves to the infection at a time when it was epidemic without receiving the least taint, and yet have some time after been pretty severely handled —.

We are not absolutely assured that the *Small-Pox*, by INOCULATION, does not convey the seeds of other diseases in the human body. Many who have written in favour of this method, affirm they do not communicate other disorders, GUIOT, notwithstanding, thinks differently ; and that where the operation is performed the *pus* should be had from a subject free from every other disorder —.

Again, the practice of INOCULATION is recommended, because it intirely destroys every apprehension of a future infection. Many undeniable examples, however, can be produced, that persons who have been *inoculated* (whether the infection succeeded or not) were again visited by the true and genuine *Small-Pox*.

It has been maintained that any time of life, from infancy to old-age, is equally proper for INOCULATION.

But

But when we consider that a very bad sort may happen, or at least a very large crop of the *distinct*; and that the assistance of the physician will in this case be necessary, and children are not easily tractable, should *dentition* intervene; what may we not expect? Many excellent and judicious physicians have therefore advised INOCULATION in children after the age of five. It has indeed been asserted, and by sufficient authority, that many, who have had the *Small-Pox* in the *natural* way, have had them again. But this likewise is the case after INOCULATION. Time must determine whether this happens more frequently after the *one* or the *other*.

The favourers of INOCULATION have cautiously pointed out some circumstances when the operation should for a time be postponed — and have more particularly refused the operation

when the disease was epidemic — for fear the patient might be overloaded both by the *contagion* as well as by the INOCULATION.

It is certainly wrong to introduce the practice of INOCULATION in such places as are free from the contagion; and it would become the duty of every civil magistrate to prevent it — for it is notorious that it will spread as effectually as the *natural Small-Pox*.

I am aware that the prudent cautions given by *Kirkpatrick*, and other judicious physicians, are neglected; and that the practice of INOCULATION is carried on in every period of life, at every season of the year, and even at the time when the epidemic *Small-Pox* prevail. But I much doubt whether such a practice be not rather destructive. The following case from Dr. HAEN will strongly corroborate my sentiments upon this head: “ This year

“ year I attended four patients who
“ had been inoculated, and twelve
“ who had the *Small-Pox* in the natural
“ way; of the former one died, of
“ the latter none; though some of
“ them were of such bad constitutions
“ as to engage me not to suffer any
“ one of them to be inoculated.” Thus
have I briefly recounted the reasons
which have hitherto induced me not
to advise INOCULATION.

Of EPIDEMIC DISEASES.

WE are now come to the consideration of that change or alteration which is sometimes observed in diseases, and does not depend upon the particular nature of them, but some other frequently secret cause, creating a new distemper which attacks numbers at once, and is very different from that whose name it bears and is known by.

Thus the *ephemera*, which runs its whole course in twenty-four hours, is very easily cured — but the *ephemera*, as described by Dr. CAIUS, destroyed infinite numbers — The disease bore the same name, continued the same time; but the event was quite different. The common *ephemera* is attended with no danger;

danger; that described by CARIUS, called also *febris sudatoria*, was often fatal in a few hours, and quickly spread its infection over whole nations; and was for that reason afterwards called the pestilential *ephemera*. Each kind is attended with sweating, but in different degrees. In the common it is gentle; in the pestilential *ephemera* it is so profuse that it intirely weakens the most robust man in a very few hours; nor can it be well subdued without great danger of the patient's life. I have known an epidemic pleurisy, which was not to be treated as is the usual method, nor would it yield to repeated bleeding, but was happily overcome by copious emollient decoctions and large doses of oily medicines.

SYDENHAM says, that whilst one epidemic constitution reigns, every other disorder in some measure participates of the nature of the reigning epidemic;

epidemic; when the *Small-Pox*, for example, is epidemic, the continual intercurrent fevers have symptoms common to the *Small-Pox*, and during the state of contagion are without those symptoms which accompany the eruption and suppuration. He observes, that a pleurisy, which he calls symptomatic, attended the fever which broke out in the year 1675 — but all who were seized with the pleurisy were afflicted in the beginning with a pain in the head, back, and limbs; which were the most certain and common symptoms of all those fevers that preceded the pleurisy, and continued after that disease went off. He farther adds, that, in order to know this *diagnosis*, it is necessary the physician should have much penetration and attention, so that he may upon inspection be in a condition to distinguish what genus the disorder belongs to, although the characteristic

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characteristic differences may be so fine and subtle as not to allow of words to express them.

SYDENHAM enforces our attention to the reigning epidemic constitution, whilst we are engaged in the cure of other diseases — for, “ whenever any
“ constitution produces various species
“ of epidemics, all these species differ
“ in kind from those which have the
“ same name, but are produced in
“ another constitution.” The predominant epidemic is apparent in the other intercurrent diseases. “ It is further to be noted, that, in whatever
“ years these several species prevail at
“ one and the same time, the symptoms wherewith they come on are
“ alike in all —.”

HIPPOCRATES called that latent cause of epidemics the *cró deíov*, and confirms the doctrine of SYDENHAM, that a physician should, by every possible investigation,

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investigation, inform himself of the nature of epidemic diseases, and, by every endeavour, learn the constitution of the season.

Although the cause of the epidemic diseases may not always proceed from an alteration in the temperature of the air, yet it is universally allowed that there are several qualities in the air which surrounds us well worthy the physician's attention, since they may either prove noxious or salutary.

Since there is such a considerable difference in diseases of the same denomination, as this or that epidemic constitution prevails, it is evident that the method of cure must vary accordingly.

These intercurrent disorders therefore, as SYDENHAM calls them, are not indeed to be exactly managed as the then epidemic disease, but the particular nature of that *epidemic* must be however

however considered. — We ought chiefly to consider by what outlets nature means to throw off the concocted morbid matter of the disease; for then the same will probably happen in the intercurrent disorders, though they may differ from the epidemic — thus, if the epidemic terminates happily by a critical sweat, we may expect the same in a pleurisy; for, from the nature of this disease, we know that such a crisis is sometimes its cure —. For this purpose we should direct copious draughts of thin, small, warm drink, which cannot at the same time be injurious to the pleurisy. SYDENHAM very judiciously observes, “ in this case they are not to be
“ treated by the method which is to
“ be used when they are essential diseases, but rather by that which the
“ fever requires, whereof they are now
“ symptoms; which method is only to
“ be

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“be slightly adapted to their particular cure.” —

There can be no doubt but that an error committed in the six non-naturals may produce disorders, and those of a very general nature; so, for example, when people, upon account of dearth, or in long sieges, are under a necessity to feed upon putrid provisions, to drink stinking or stagnating water, &c. — Now by this error in the non-naturals we are not to understand that secret cause which changes other diseases into the nature of epidemics — since those who can procure more wholesome food and liquor will escape the disorder, which the poorer sort of people, or common soldiers, had it not in their power to come at.

HIPPOCRATES says, “Diseases arise partly from our manner of living, and partly from the air we breathe.” He then goes on to describe how we
are

are to distinguish epidemic from other diseases: "When many men are at one
" and the same time seized with the
" same disorder, we are to seek for the
" cause in such things as are most
" common and in general use, that is,
" in the air — for it is evident it can-
" not be in our manner of living, since
" the disorder seizes upon all, without
" distinction of age or sex, manner of
" living, &c. — the temperate and the
" intemperate, the sedentary or the
" laborious, the weak and the strong,
" are equally attacked," &c. hence he
observes, that a vicious diet may reason-
ably be considered as the cause of par-
ticular diseases, but, where diseases are
general, we should be very careful not
to alter our manner of living, for that
is not the cause; "it will be necessary
" only to prevent corpulency as much
" as possible, by gradually altering
" and reducing our ordinary meals;
" since

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“ since it will be dangerous too if
“ we suddenly changed our diet.”
Dr. CAIUS, in confirmation of HIPPOCRATES’s observation, tells us, that scarcely any but the people of *England*, who lived luxuriously, were seized with the sweating sickness. —

From what has been said it will appear that an error committed in our diet can only predispose us to receive, from some other occasional cause, an epidemic disease, but that singly it can never produce it. — Hence we may conclude that the exciting or procatartic cause is not in the abuse of, or error in, the six non-naturals, but in some other less known to us; so that the most expert, as well as most experienced, physicians have been obliged to confess themselves ignorant of the true cause of epidemics, which shew themselves indeed by their effects on the human body, though their peculiar
and

and specific nature remains an unsearchable secret. SYDENHAM observes, “ the specific differences of epidemic distempers, especially fevers, depend upon the secret constitution of the air; that those persons labour unprofitably who deduce the causes of different fevers from the morbid matter gradually collected in the body; for it is evident, that, if any man in perfect health should remove to any part of our own country where an epidemic disease rages, he might in a few days be seized with it, though it is scarce credible that any manifest alteration should be made by the air in the juices of the same person in so short a time.”

This secret and unknown nature of epidemic diseases disturbs the usual course of other intercurrent ones, and obliges physicians to treat them by the rule of the predominant epidemic—but

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in the plague, the chief of all epidemic diseases, the others lose themselves, or, should any arise, they always terminate in it.

In the years 1718 and 1719, when the plague raged so violently in *Aleppo*, that eighty thousand died of it in the space of six months, the *English*, who shut themselves up, escaped the infection; the natives, who from a principle of predestination neglected this precaution, fell in great numbers. These *Europeans* used, from the flat tops of their houses to converse, with their *Turkish* neighbours, and even open their windows for the same purpose — this circumstance inclined some people to imagine the infection was not in the air — but, when we consider this intercourse was held from the upper parts of the houses, we may suppose the contagion was dispersed over the whole atmosphere, and had, in

in a great measure, by that means lost its deleterious taint; so we see the most powerful poisons rendered almost ineffectual when diluted in a large portion of water; and that this pestilential air may be purified by dilution, as it were, proved from many experiments which have been made on the corrupted air in wells, &c.

We are also assured, from repeated experiments, that the air, in a serene, warm, and dry season, contains, nevertheless, a quantity of moisture dispersed over the whole atmosphere, and yet there seems not to be the least appearance of it; but, whenever this water, which before was equally dispersed, collects itself into clouds, the serenity of the air will be disturbed by rain, snow, or hail; yet heavy black clouds collect in the air, and gradually disperse without producing rain, snow, or hail; and when they vanish the former serenity returns. It is evident, therefore,

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that matter may be collected in the air, disperse, and vanish. If a contagion be dispersed in the air, it may adhere to the moist airy particles, and with them be collected in clouds, and they again obtain the power of infection, which by its dispersion it may have been supposed to have lost. Hence it appears that the noxious vapour is inherent in the air, which produces epidemic diseases, and sometimes shews itself by other signs. Thus in the plague at *Oczakow*, the chirurgical instruments were observed to turn black as if they had been dipt in *aqua-fortis*. The silver hilt of a sword, which hung up in a tent during the whole time of that direful contagion, was also changed to that livid and dismal colour —.

HIPPOCRATES very justly says, “that
“ the bodies of men, and all other
“ animals, are supported by three kinds
“ of aliment, *meat, drink, and air.*”

He

He afterwards subjoins, that diseases seldom arise from any other cause than that state of the air which is more or less infected with a morbid contagion —. Since therefore the air adheres to and floats in our fluids, and is at the same time connected with our solids, it will necessarily follow, that the contagion which is in the air will penetrate into and disturb every part of the body.

Winds may be either noxious or salutary. They will be salutary when they so disperse the unwholesome causes of epidemics throughout the atmosphere, as to diminish or destroy their effects. — They will be noxious when instead of dispersing they only transfer the unhealthy *effluvia* in the air from one place to another. The inhabitants of *America*, surrounded by the woods and thickets, perished by malignant diseases, which very soon corrupted

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their bodies with a kind of putrid fever. But, as soon as these woods were cleared away, and a free passage by that means given to the air, these diseases intirely left them, and were seldom or ever afterwards heard of.

DEGNER very curiously remarks, that the house in which a person died of a dysentery had been, as it were, the center from which the disease radiated over the whole city — and farther observed that this distemper was more violent and frequent in the neighbourhood of that house than in any other parts of the city — this confirms an aphorism of SANCTORIUS, *Radii pestis vento loco dimoventur, corporis lucidi nulla vi.*

HUXHAM declares that he has often known *epidemic fevers* to decrease very much after storms and heavy rains — HIPPOCRATES, and physicians long before

fore his time, imagined that the noxious air might be purified by *fire* — but, as fire certainly increases the action of many bodies, hence, unless it either destroys or disperses the noxious quality in the air, we shall have reason to fear it will only give additional force to the active powers. We cannot expect great advantages from fires in the open air. But it seems probable that the noxious quality in the air may be destroyed if all the infected air can be made to pass through the fire — but this destructive power of fire acts only on the adjacent air, and cannot affect that which is at a considerable distance; a better effect therefore may be expected from a fire kindled in a house, than from one lighted up in the open air.

MORTIMER observes, that when he had the *Small-Pox*, the houses, adjoining to his chimney which had a fire in

it, received the infection, whilst those at a greater distance kept free from it. This proves that the contagion is not intirely destroyed by the fire and smoke, but that a part of it remains in the air, though it becomes at last so fine as to lose its infectious quality —.

This dispersion or *fineness*, as it were, in the air, is not always equally the same. We may observe, in a cloudy, warm, damp, and calm air, the smoke with difficulty, if at all, ascending through the chimney, and even when it is at the top it hovers over the chimney, and remains seemingly motionless for a considerable time, and the house is filled with smoke. — At the time of the plague at *Toulon* the smoke, which was made by the fires in every part of the city, did not spread itself through the atmosphere, even on the day after the fires had been kindled; and this might probably

probably be a reason why the plague did not cease in consequence of the heat from those fires.

Since it appears from woeful experience that beds, cloaths, and furniture, which were about those people who had the plague, retained the infection for a considerable time after; physicians have been very cautious how they have had them burned, lest by such a step they might spread the infection. LOBB therefore never ventured to burn such sort of things but in an open uninhabited place, and with such a wind as would drive the smoke from villages and towns; this, however, he confesses is not always eligible, as the wind may suddenly shift about.— he thinks for that reason the best way is to sink such things in the deep ocean, or under the earth, covering them at the same time with fresh lime, sprinkled with aqua-fortis, oil of vitriol, &c.

He

He tells us of some cloaths which were burnt to destroy the contagion of the *Small-Pox*; it succeeded perfectly well in the infected house, and in the neighbourhood of it; but the wind blew the smoke to the opposite side, and with it carried the infection, which appeared in a sudden and wonderful manner; this proves that the contagion is not intirely destroyed by fire, but that it may be transported in its full force from one place to another. Over and above the expectations physicians had to destroy the contagion by fire, they hoped they might by such means disperse the collected pestilential ruins through the whole atmosphere, and so render its effects less terrible — they had therefore recourse to gunpowder for that purpose. From what has been said it appears, that the cause of epidemic diseases is in the air. But it is a point of the utmost difficulty to determine

mine what quality it is in the air which produces such noxious effects.

SYDENHAM, after a very diligent and attentive pursuit, candidly confesses, that he lost his labour — “ I must own, says “ he, I have hitherto made no progress, “ having found that years, perfectly “ agreeing as to the manifest temperature of the air, have nevertheless produced very different tribes “ of diseases, and *vice versa*.” It is no wonder, then, that I have had no better success, though I had, for ten years together, three times a day, very carefully noted down the altitude of the barometer and thermometer, the direction and force of the winds, the quantity of rain, the different temperature of the air, the variety of diseases, the number of sick, as well as of those who died. Many proofs may be brought to shew that the plague frequently causes a sudden putrefaction; and,

and, as the sultry heat of summer is known to have this effect, especially if it be at all attended with moisture, we find the unhappy sufferers by this misfortune ever longing for the intense cold of the winter, in hopes of some respite to their sufferings — yet the plague at LONDON began in December, 1664. At *Warsaw* it began in May, and almost ceased about the end of June; but it returned with redoubled fury, on the first of July, by the accidental breaking out of a fire. And it has been a general observation, that the plague at *Aleppo* has abated at the time the weather has been hottest; hence we may reasonably conclude that the putrescent quality of the plague differs from that which is occasioned by heat. Although it must be owned that putrid exhalations are even so injurious as to produce epidemic diseases, yet it is by no means certain that all epidemic diseases are caused by putrefaction;

trefaction: for the latent noxious quality in the air cannot always be reduced to any known species of acrimony. It has been observed that tanners, and those who prepare glue, continually breathe a putrid air, and yet they retain their health — besides, if we suppose all epidemic diseases to be occasioned by putrefaction, how shall we account for their attacking men, at other times animals, without any apparent injury to one another, unless they live under the same roof? MALOUIN, who writ admirably well upon the plague at *Lyons* and *Marseilles*, assures us, that those places which were narrowest and the dirtiest, and were the most inhabited, were clearest from the infection — and in the plague at *LONDON* the physicians ordered all the bog-houses to be opened; upon which the plague ceased — we may hence naturally conclude that the cause of epidemic diseases,

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diseases, arising from some other inherent quality of the air, is different. HUXHAM observes, that, when the ground is frozen, it prevents the noxious exhalations; but, when a thaw comes on, many epidemic diseases may happen — for, in a thaw, “*omne solum,*
“*quasi aqua perfusum, bumescit, imo*
“*fere spumescit, data scilicet via va-*
“*poribus à calore subterraneo elevatis;*
“*at gelu ante ad superficiem terra*
“*adstrictis.*”

The plague, which happened at *Venice* in the month of February, of the year 1343, was with reason ascribed to a preceding earthquake, as in all probability the exhalations from that event might be noxious. — At *Oczakow*, on the contrary, an earthquake was felt on the very day the plague began to abate — Was it that the earth exhaled the vapours destructive of the pestilential contagion, or that the noxious exhalations

exhalations were in a great measure wasted before the earth shook? Certainly it does not appear more impossible that some exhalations should destroy the pestilential poison, than that another should engage its fury —.

It has been observed that places in the neighbourhood of spice-houses have escaped the infection; and DIEMER-BROECK, during the time of the plague, found the smell of soap to be very injurious; he declares, moreover, that the only and best preservative he made use of, was tobacco, of which he smoked several pipes in a day, more especially when he had any reason to think himself a little attacked. Natural history informs us, that an incredible swarm of insects float in the air, and from thence convey themselves into water and other liquids in such numbers, that the eye, assisted by glasses, may perceive whole shoals of animalcules in one single drop

drop — these were therefore imagined to be the cause of epidemic diseases.

It is well known that the canker-worm eats spurge, the sharp juice of which, though it does not destroy the bowels of that small insect, nevertheless powerfully corrodes the warts on the skin. MENTZELLIO therefore imagines it not at all improbable but that epidemic diseases may arise from the vast quantity of such insects in the air.

But, if animalcules in the air were the cause of pestilential and other epidemic diseases, it would not be easy to account how the strictest guard could obstruct the infection in its progress — yet we know from history that this has been effected; besides, if epidemic diseases were occasioned by a pestilential air replete with these innumerable insects, it would necessarily follow that every body would be more or less infected;

fect; but this does by no means happen. We meet with a very remarkable instance of this in HEISTER, an author of undoubted veracity and reputation, and to which there are, moreover, still many living witnesses. In the year 1711, an acute continued fever raged at *Altdorf*, which however was neither very violent, nor indeed very mild. It attacked none but the academics, although they lived up and down in various parts of the city, breathed the same air, and used the same diet as the rest of the townspeople — and from thence it took the name of the *university fever*. The university printer, who lived at some distance from the college, and his whole family, and his workmen, had the disease, though another printer, who lived much nearer to the college, and his whole family, escaped the contagion. As the report of this

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fever was spread abroad, some persons at *Nuremburg* sent for their sons; they were notwithstanding laid up with this fever at home, and some of them died. It was even astonishing that the *Professors* who had this fever communicated it to their families, though the *Students* did not infect those citizens with whom they lodged.

Upon the whole, it is best to conclude with SYDENHAM, that “ these
 “ diseases proceed from a latent and
 “ inexplicable alteration of the air,
 “ infecting the bodies of men; and
 “ not from any peculiar state or disposition of the blood and juices,
 “ any farther than an occult influence
 “ of the air may communicate this
 “ to the body; these continue only
 “ during this one secret state or constitution of the air, and, raging at
 “ no

“ no other time, are called *epidemic*
“ *distempers.*”

It can scarcely be said of all epidemic diseases that they are contagious, and that this contagion will communicate itself from one person to another. Although about the autumn great numbers fell ill of a double tertian, which, from the length of its paroxysms, is almost equal to a continued fever, it was not remarked that they spread the infection. — In the milder kinds of epidemics, the vernal tertian, for example, nobody suspects or guards against the contagion; nay, even such as, from being attended with the worst of symptoms, have given great suspicion of a malignancy, were nevertheless upon no account contagious. When, in the year 1756, the noxious effluvia of the lakes occasioned the worst kind of epidemic fevers, attended with

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exanthematous eruptions, petechiæ, broad gangrenous spots, glandular tumors, and other bad symptoms, which sufficiently testified their malignity by the numbers who died; yet even then the fevers were not contagious.

It follows therefore that the common latent cause in the air may produce epidemic disorders even of a malignant kind, which may affect numbers at once, and yet not communicate themselves from one man to another.

— This consideration has induced some to imagine that epidemic diseases, and even the plague itself, are not often, nay very rarely, catching, and depend upon some noxious quality in the air.

But *inoculation* for the *Small-Pox* proves the contrary — and it may be farther observed that the *Turks*, and other nations who do not take proper cautions

cautions with regard to burning the infected cloaths, or to keep their merchandise and other things sufficiently exposed to the open air for a considerable time, have frequent returns of the pestilential infection.

It cannot, with precision, be determined how long bodies will retain the contagion before it be communicated — it seems probable that, if it be confined, they may long keep their deleterious quality, and that, when the accumulated effluvia are let loose, they are productive of infinite destruction.

Various arguments seem to prove that the contagion alone is not sufficient to produce its effects without a predisposing cause. In the East the plague would, at that rate, be always raging; yet it sometimes ceases, and then returns. In the time of a plague all are not equally affected,

though they all live exposed to the same infection — strong passions, and fear more especially, increase the power of the plague, as many who have professedly written upon this subject sufficiently testify.

SYDENHAM confesses that he was often at a loss how to proceed when a new disease appeared: “When I
“ was again doubtful, says he, how
“ to proceed, and, notwithstanding
“ the utmost caution, could scarce
“ ever preserve one or two of my
“ first patients from danger, till I
“ had thoroughly investigated the
“ nature of the distemper, and then
“ I proceeded in a direct and safer
“ way to the cure.”

For sometimes diseases arise, which, although they may be denominated epidemic, yet are more properly anomalous, and cannot be known by any distinguishing character, and are
attended

attended with such a variety of symptoms, that the same disease, in the very same constitution of the year, will appear under a different face —.

The first enquiry a physician ought to make, when epidemic distempers go about, should regard the fevers which attack numbers at any particular time of the year, about autumn, for example; and he should consider whether they belong to the tribe of continued or intermittent fevers. Autumnal fevers, having long and redoubled paroxysms, frequently wear the type of continued fevers, and yet their nature, as well as their cure, demand a different treatment. These sort of fevers usually run into intermittents as soon as their fit abates — when the prudent physician observes this, he will rationally conclude, that such fevers, though they have the appearance of continued fevers, are, notwithstanding, to be

classified amongst the intermittents, and should be treated as such.

In treating all disorders which arise in every epidemic constitution, a reference should be had to the predominant epidemic distemper. So, for example, when the *Small-Pox* are epidemic, a variolous fever will reign at the time, which has all the symptoms of the *Small-Pox*, except the eruption, inflammation, suppuration, and incrustation of the pock; the vestiges of the reigning epidemic will be likewise visible in many and various other cases. — SYDENHAM observes, “ But, how many peculiar
 “ species soever arise in one and the
 “ same constitution, they all agree
 “ in being produced by one common
 “ general cause, *viz.* some peculiar
 “ state of the air; and consequently,
 “ how much soever they may differ
 “ from one another in appearance
 “ and specific nature, yet the con-
 “ stitution

“stitution common to them all works
“upon the subject-matter of each,
“and moulds it to such a state and
“condition that the principal symp-
“toms (provided they have no re-
“gard to the particular manner of
“evacuation) are alike in all, all of
“them agreeing in this circumstance,
“that they respectively grow mild
“or violent at the same time. It is
“farther to be noted, that, in what-
“ever years these several species pre-
“vail at one and the same time, the
“symptoms wherewith they come on
“are alike in all.” Although HIP-
POCRATES mentions the winter and
summer, as well as the vernal and
autumnal diseases; yet SYDENHAM,
from a very close attention, learned
that epidemic diseases naturally chang-
ed twice a year; that is, about the ver-
nal and autumnal equinoxes. He con-
fesses, indeed, that diseases may arise at
any other season of the year; but he
would

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would have them all referred to that season to which they most properly belong, be it spring or autumn. For diseases appear sooner or later, according to the temperature of the air; hence he says, "When I speak of the spring or autumn, I do not mean strictly the vernal and autumnal equinoxes" — thus he observes that the vernal epidemics sometimes begin even in January, and gradually increase till they come to the vernal equinox; then as gradually decreasing, they disappear about the summer solstice. Thus too he remarked, that the measles often began in January, and the vernal tertian in February, which yet were intirely subdued about the summer solstice. Other diseases beginning in the spring and increasing daily, arrive at their *acme* about the autumnal equinox; then, gradually declining, disappear in the winter.

Vernal

Vernal fevers generally commence in February, the autumnal in August; yet they do not come to their *acme* at the same time. It has been observed, that, when these fevers make their appearance, they generally assault numbers, and *è contra*.

Hence when SYDENHAM, about the end of the year 1661, remarked some who were attacked with a quartan, he concluded that great numbers would have it, and the event justified his observation — Hence fewer people are sick in June and July; and SYDENHAM therefore very properly says, “It must be carefully remarked, “that, as many of these diseases appear in the same year, some one or “other of them rules over the rest, “which rage less at the same time; so “that, this one increasing, the others “decrease; and, this diminishing, the “others soon re-appear.”

The

The same excellent physician observes that as other diseases have their increase, state, and decline, so have epidemic distempers, with respect to their becoming more and more general till they arrive at their *acme*; then they decline, till, giving way to some other constitution, they intirely disappear. The symptoms attending these diseases are at the first alarming; they become milder, till at last they are as kind and benign as the nature of the distemper can allow them to be.

It is worth remarking that one epidemic distemper drives out another, yet not so as that the one intirely disappears; but it rather makes its attacks less frequent, and at length quite ceases; or, changing its constitution, gathers fresh strength, and prevails again over every other distemper; when this happens these distempers are called not only epidemic but *stationary*.

SYDENHAM

SYDENHAM says, that by this name
“ I mean such as arise from some
“ peculiar constitution of a particular
“ year, not yet sufficiently known.
“ Every one of these prevails in its
“ order, and rages with great vio-
“ lence, having, as it were, the
“ ascendant over all the rest, during
“ that continued course of years.”

He confesses that he had not yet been able to discover whether these diseases succeeded each other in one certain term of years. But he cautiously adds, that he will not contend about names, so long as the thing itself be agreed upon; but thinks he is intitled to call a disease by such a name as is most suitable to himself.

During the time of an epidemic, other distempers are frequently seen to rise, which however do not depend upon the constitution of the then reigning epidemic. These SYDENHAM called

called *intercurrents*; they sometimes, though very seldom, become epidemic; but should nevertheless be distinguished from the prevailing epidemic.

The distinguishing characteristic of these diseases is, that they are caused by some manifest quality in the air. Thus, for example, when a long hot season succeeds a long frost extending itself even till spring, we shall then find pleurifies, sore throats, &c. come on — such indeed may be the general constitution of many years, nay, of every year, provided the same cause prevails. The same may happen after violent exercise, when the person exposes himself to sudden cold — SYDENHAM then called these diseases *intercurrents*, which were most, if not all, of them essential distempers.

But, as he distinguished symptomatic diseases from essential, he carefully noted the phenomena which attend

attend the reigning *stationary fever*; for, if he observed the same phenomena in the beginning of a pleurisy or sore throat, he judged these distempers to be merely symptomatic; in that symptomatic pleurisy which appeared during the fever in the winter of the year 1675 he observed, "For
" all that were seized with the pleu-
" risy were afflicted, in the begin-
" ning, with a pain in the head,
" back, and limbs; which were the
" most certain and common symp-
" toms of all those fevers that pre-
" ceded the pleurisy, and continued
" after that disease went off. Whereas,
" when either of these *intercurrents*
" is the *essential* disease, it attacks in
" the same manner in all years in-
" differently, having nothing at all
" in common with the then pre-
" vailing *stationary fever*. Besides,
" all the symptoms that afterwards
" arise

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“ arise are more apparent, as not being concealed and perplexed by a mixture of other phenomena, of a different nature, and belonging to another fever.”

The time of the year, when these *intercurrents* happen, tends much to the illustration of the *diagnosis*. Thus, for example, if a pleurisy attacks some few when the spring is far advanced, or in the beginning of the summer, it may be esteemed an *intercurrent disease*, yet essential and intirely distinct from the vernal epidemic fevers, because inflammatory disorders are natural to that season of the year. But, should the same disease appear in autumn, at the time of an epidemic constitution, we may then, with reason, suspect the pleurisy partakes of the nature of the reigning epidemic, and that we should, in our treating the cure, have an eye to that very particular

particular circumstance. It is very necessary to throw as much light as possible on doubtful cases. For, if a physician has learned what the symptoms are which either precede or accompany an unhappy change of a disease, he will exert his utmost abilities, either to prevent or to alleviate them — and, should such symptoms arise as promise a recovery or an amendment, he will frequently be a spectator only, and never attempt to disturb the operations of Nature by an untimely or injudicious interposition of remedies. But to do this requires the nicest attention.

“ Nature, says SYDENHAM, produces
“ whatever she causes to exist by fixed
“ laws and a method of operating
“ known only to herself, and conceals
“ the essence and constitutive differences of her productions in the
“ greatest obscurity. Hence every
“ species of diseases, as well as of
“ animals and vegetables, is endowed
Vol. III. O “ with

“ with certain peculiar and universal
“ properties, resulting from its essence.
“ However, an enquiry into the man-
“ ner of curing diseases may proceed
“ very successfully, though we are igno-
“ rant of their causes, because the cure
“ of most diseases is not effected by this
“ kind of knowledge, but by a suitable
“ and experienced method.”

When fevers of the very worst sort of the continued remitting happened in consequence of noxious vapours rising from the lakes, their malignancy was so great, that it immediately deprived the sick of their strength, brought on violent head-achs, delirium, and lethargic coma, nay, sometimes an apoplexy. — Many had eruptions, petechiæ, swellings of the parotid gland; others again had gangrenous spots. Yet powerful as the disease was, and great as the destruction, that happened in consequence of it, it was surprisingly cured without any medical assistance,

assistance, whenever small purulent pustules were seen to break out upon such as were attacked with the disease. It is no wonder therefore that the physicians were very happy when ever this fortunate symptom appeared, and that they had nothing else to do than to leave their great mistress, *Nature*, to finish her own work.

In the beginning of the plague, the contagion, armed with wonderful subtilty, suddenly, and as it were by surprize, seizes its prey, which it destroys, and leaves disfigured, with purple spots. In this case death is preceded by no fever, or any other forewarning disease. This does not only happen in the plague, but, as Dr. SYDENHAM observes, " that
" all epidemics, at their first appear-
" ance, as far as can be judged from
" their symptoms, seem to be of a
" more spirituous and subtile nature
" than when they become older ; and
O 2 " that,

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“ that, the more they decline, the
“ more gross and humoral they daily
“ grow, for, whatever kind of particles
“ those are, which, being intimately
“ mixed with the air, are esteemed to
“ produce an epidemic constitution; it
“ is reasonable to conclude that they
“ are possessed of a greater power of
“ acting at their first appearance, than
“ when their energy is weakened.”

Sometimes the nature of a disease is changed by some acceding cause, although the epidemic remain the same. The very accurate SYDENHAM perfectly knew this. An epidemic fever arose, in which morbid matter affected the head and brought on a lethargy, more especially if the cure was attempted by sweating. — This disorder was slow before it yielded to the various methods tried to relieve it—. This excellent physician, therefore, upon finding this to be the nature

ture of the disease, after having unsuccessfully tried bleeding, blisters, clysters, &c. — left her to herself, with this precaution, however, to abstain from flesh-meats and spirituous liquors —.

But, when this disorder was epidemic, it happened that the warm air, which uncommonly lasted till the latter end of October, suddenly became cold and damp; this was succeeded by coughs, which, without regard to age or constitution, attacked whole families. These coughs had this in particular, that they excited a fever, and the morbid matter, which, from the epidemic constitution affected the head, was translated to the lungs and sides, and so caused the pleuritis and peripneumonies, which were very frequent after these coughs.

But, since these diseases began with symptoms like those which attended the epidemic lethargic fever, SYDEN-

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HAM concluded that they were not essential, but partook of the nature of the reigning epidemic; "only that the febrile matter, when it was copiously deposited in the lungs and pleura, through the violence of the cough, occasioned such symptoms as belong to those parts." And this truth was fully confirmed by the manner in which the distemper was treated; for they very readily yielded to such medicines as were administered in the lethargic fever, and the usual method of treating pleurifies and peripneumonies proved intirely ineffectual. This fully proves how very attentive and perspicuous we should be, if we mean to treat epidemic distempers with success and propriety.

It is essentially and absolutely necessary to distinguish properly between what is useful or prejudicial in practice. And it has already been observed that the nature
of

of epidemic diseases is so occult as to foil the most skilful physician in his intentions. In this case, says *Celsus*, it is best to consider and examine what disorder it most resembles, and to try similar remedies.

In the beginning of the plague SYDENHAM directed copious bleeding, but if any tumor appeared on the surface of the body he altogether condemned it — and confirms his own sentiments by the testimony of *Botullus* and other eminent writers.

Others maintain that bleeding in the plague is very injurious, and among others DIEMERBOECK cursorily — but all are agreed in this, that bleeding is never useful but in the beginning, and always prejudicial after the appearance of swellings. If in different people attacked with the same disease certain symptoms, more especially at the beginning of it, constantly occur, we

thence judge of the nature of the distemper, although from the different constitutions, method of living, &c. it may appear under various shapes. —

The following rule of HIPPOCRATES is of great use: “ In distempers, says he, the natures of which we are but little acquainted with, we should be very sparing of medicine.” And SYDENHAM very honestly, as well as very judiciously, declares that, “ under so much darkness and ignorance, therefore, my chief care, as soon as any new fever arises, is to wait a little, and proceed very slowly, especially in the use of powerful remedies; in the mean time carefully observing its nature and procedure, and by what means the patient was either relieved or injured, so as soon to embrace the one, and reject the other.” He did not intirely refrain from giving medicines, but from giving
ing

ing *powerful* remedies. He prescribed diluting liquors to prevent putrefaction, and quench thirst; and, in order to support the patient's strength, farther directed a light regimen, so as yet not to overload the body. Thus he continued to act, carefully at the same time observing the course of the disease, and the efforts which *Nature* made to overcome it.

Of the S T O N E.

THE Stone is a concrete hard substance in the human body, more or less hard, resisting the touch; generally pretty friable, when compared with the bones and teeth; not soluble in water, or any humor in the human body; different from every other species of morbidic coagulation. There is scarce any part of the human body in which a stone has not been found; hence it should seem that the matter which forms it either actually exists in, or is conveyed through every part of the body.

The stone is not, nor cannot, be observed whilst it is forming in the internal parts. It only then manifests itself

self when already formed, it in consequence of its size and figure, injures the functions — since repeated and accurate observations have proved that stones, and those pretty considerable ones, may have lain in the body a considerable time without affording the least grounds of suspicion that there had been any. Even a child in the womb is not free from it. One was found in the *pelvis* of the kidneys of a new-born male child as big as a pea. It would be a difficult matter to discover the nature of the stone, even if it could be placed before our eyes in its original state.

However, since stones are more frequently found in the urinary passages than in any other parts of the human body, and, remaining longer in the bladder, grow to a very large size, it has been imagined that something of
their

their rudiments might be discovered in the urine.

These rudiments are in the urine of the most healthy people; and if they come away with it, before they have subsided and concreted, they can do no great mischief whatsoever — but, as these rudiments are known to separate sooner in some subjects than they do in others, it will follow that those in whom they do subside will be most liable to the disorder. I have frequently seen gravel discharged, which has immediately sunk to the bottom of the urinal, the urine being still reeking and warm. — A quantity of tolerably hard gravel has sometimes been found on the clouts of young healthy children, which must have been discharged with their urine; for, as they were the children of people of high rank, it is not at all probable to suppose they were allowed to remain long in the same clouts,

clouts, so that it could not be the gravel formed in the urine made two or three hours before. If the smoothest quill be dipped into sound urine just made, we shall find a very thin crust of sand adhering to it, and, when dipped again, it will collect still more. In this manner may a stone be formed out of the body; that is, when another solid body is dipped into the urine, about which, as to their basis, the elementary concretions form themselves and adhere. Hence the material cause of a stone may be found in the most sound humors; but the occasional cause is in some one or other insoluble substance fastening on some part of the body, attracting the stony rudiments, even in persons where no disposition to such a disorder was ever suspected. For a stone is generated by external addition; nor grows, as organic bodies, by the extension of the vessels, but in consequence

quence of the calcarious matter deposited on the original basis; and, indeed, wonderful as it may seem, out of the sound human urine, which is found where the stone grows.

NUCK made a very curious experiment to shew the accretion of the stone in the human body — having opened the hypogastrium of a living dog, he drew out the bladder, upon the bottom of which he made an incision, and put a round piece of wood into the wound; the fibres having contracted themselves, he returned the bladder into its place, and healed up the wound. — The creature, for the first two days, seemed dull and stupid, but soon returned to its appetite and alacrity; it seemed to have no other uneasiness than that of frequently having occasion to piss. — Some weeks after he dissected the dog before several people, “ when the piece of wood,
“ extracted

“ extracted from the bladder, appear-
“ ed covered with a calcareous coat,
“ not unlike what we observe in sugar-
“ candy adhering to the sticks within-
“ side” — hence he concludes that the
stone, being first generated in the kid-
ney, falls into the bladder, and forms a
nucleus there, which increases by a
constant access of calcareous matter.

He says too, that any other hetero-
geneous substance, falling into the blad-
der, may, as it were, lay the founda-
tion of a stone — and, to confirm it,
relates a case, from TULPIUS, of a man
who, having being gored by a bull into
the bladder, was attended by a surgeon,
who, carelessly dressing him, left a
pretty large tent in the bladder, and the
wound was healed up. Some time
after the poor man was seized with all
the symptoms of the stone, and one as
big as a man’s fist was extracted, in the
middle of which was found the tent
that

that had been left in the bladder; the man did well.

From what has been said it appears, that the rudiments of the stone, which are found even in the most sound urine, soon fly to any insoluble substance, which sticks in the urinary passages, whether they be animal, vegetable, or fossil.

But there does not seem to be a substance to which the calculous rudiments will unite themselves, so soon as to a stone. Hence, if a small stone in the kidneys fall into the bladder, it will, unless quickly expelled, grow to a much larger size, by the daily access of fresh calculous matter; for this reason we often find a small stone, as it were, contained in a much larger.

There can therefore be no danger of the concretion of gravel in healthy urine, so long as it does not adhere to any insoluble substance as a basis — a
too

too long retention of the urine might possibly cause the incrustation of the bladder, if, from some cause or other, it should not be sufficiently repulsive.

A stone was found in a dead body which so filled the bladder, as scarce to admit a few drops of urine. — The substance of the bladder, which was about a finger's breadth thick, contained a purulent matter.

Medical histories contain a number of instances of stones found in the bladder of immense sizes. A stone was extracted from the bladder of an old man, which was of an oval figure, smooth, and close, which weighed thirty-nine ounces. As the human calculus is generally light, we may easily conceive what an amazing bulk this must have had — it is still preserved at *Florence*. This man passed a very happy old age, could hunt without any ill conveniency, and, in his last

illness, scarce had any suspicions of a stone. A stone, weighing four pounds and four ounces, was found in the body of a horse, which, eight or ten days before it died, discharged no urine, but in all this time refused to drink water, and expressed, as much as it could possibly, every sign of acute pain. The person who took out the stone asserted, that it was found between the bladder and the *rectum* — but he seemed to be ignorant of the parts of the body, and probably (unless the stone had in some measure already destroyed it) had rent the bladder.

[I have a stone, taken out of a horse, which was brought me when I resided at *Yarmouth*, weighing two pounds and ten ounces —.]

We have many instances which prove large stones grow in the bladders of mares. LEMERY presented a stone to the Academy of Sciences which was
taken

taken out of a mare, weighed twenty-three ounces and seven drachms, and was about the size of a melon. As the stone in any part of the body is continually washed by the humors which contain the calcarious rudiments, it is clear that it must continually increase in bulk when once the calcareous *nucleus* is formed. And this accounts for the number of stones found in the same part of the body; for there may be several *nuclei*. I knew a man who, every month, voided twenty stones and more from the kidneys; he very plainly felt them coming down, and foretold that he should discharge them; they came away with wonderful ease, although some of them, which I saw, were as big as small pease. It is certain, had these stones been lodged in the bladder, they would have been as *nuclei* to larger stones.

Chymists boast of having secret remedies to cure the stone, but it by no means appears they have any which can prevent its generation — I have seen persons who have voided stones almost every week — *Aretæus* of such people, amongst other things, says, “It is more easy to destroy the pregnancy of the womb, than to render calculous kidneys *αλιδες*.”

The best thing which can happen to those who are apt to ingender stones is to endeavour to discharge the concretions as soon as possible, when it is merely gravel, or very small stones; and this is done by exercise, attenuating liquors, and a frequent discharge of urine. Hence we see why many gouty and paralytic people, and others who are unable, from some cause or other, to use exercise, are so subject to the stone. For this reason SYDENHAM, instead of eating a supper, took a good draught
of

of small-beer before he went to bed, that he might have a freer discharge of urine. If the abdomen or thorax of a living animal be suddenly opened, there exhales a vapour of an urinary smell. It is the same with respect to the blood just drawn from the arm of an healthy person, or animal. We may therefore suppose that this exhaling urinary liquid contains the elements of the stone, as well as the urine. And this is confirmed, as we frequently find stones in those parts which are constantly washed by this exhaling vapour.

The ventricles of the brain in health are filled with this vapour. WEPFER, in the middle of the *plexus choroideus* of a woman, almost seventy years old, found a white, rough, unequal, chalky stone, about the size of a lupine-feed; he found others scattered about the

fides of the said plexus as big, or rather bigger than millet.

In an old man more than seventy, besides the stones lodged in the kidneys, and one in the gall-blader, about the size of a nutmeg, together with some gravel and small calculi in the urinary bladder, a stone was found involved in the membrane of the *glandula pinealis*.

Nor is the cavity of the stomach and bowels free from the stone.

HEISTER assures us he frequently found stones in those black glands which are situated near the branches of the *aspera arteria*.

In a man who died of a very troublesome asthma, of a long continuance, *Heister* says he found a stone, of a thumb's breadth, oblong, pointed at both ends, somewhat rough, and involved in a glandular substance adhering in the angle of the bifurcation of the *aspera arteria*, between the
very

very *bronchia* and *arteria pulmonalis* —
“ which, however, adds this eminent
“ writer, did not then appear to me
“ to have disturbed the action of the
“ *bronchia* and *arteria pulmonalis* by its
“ pressure.” But when, in the life-
time of the patient, the bifurcations of
the *aspera arteria* were put into motion
by respiration, and the *arteria pulmo-
nalis* was pressed upon by the whole
force of the right ventricle of the heart,
and distended with blood, it seems pro-
bable that the stone, being pretty large,
rough, and pointed at both ends,
might very frequently disturb the action
of those parts. This stone adhered
on the outside of the lungs.

It is much more surprizing that a
stone should be found in the heart,
which, during life, is in continual mo-
tion. And KULMUS found such a
one in the body of a man who was
drowned, adhering to the muscular
substance.

substance of the heart in its left ventricle under the valves of the *vena pulmonalis* — it was about a thumb's breadth long, and a fourth part as broad —. And many have been found even in the ventricles of the heart, as may be seen in the writings of SENAC. He suspects, indeed, and not without reason, that bony concretions, which are not uncommon about the heart, are very often mistaken for stones — and does not however deny but that stones had been found about the heart; and even relates that he himself saw half the thorax of an infant perfectly petrified.

If stones can concrete in the heart, which is always in motion, and through whose substance and cavities the blood rushes with the utmost rapidity, is it wonderful that a similar effect is produced in the vessels through which the humors circulate? TULPIUS thought that he was the first who described an uncommon

common sort of calculus, which, from the part it adhered to, he called the *arterial*; for, in the body of an apothecary's apprentice, who died after a tedious and severe illness, he found, amongst many other unusual appearances, the stone adhering to that branch of the *aorta* which runs to the *Eustachian* gland which lies on the left kidney. But what PISO, who lived before TULPIUS, saw in an old man, almost a hundred years old, and who enjoyed a tolerable share of health, excepting an abscess he had in each kidney, was still more astonishing. — On opening the thorax, to his great surprize, he found the *aorta* immensely dilated — upon opening the large vessel near the heart the whole trunk of the artery was incrusted with a calcareous pipe, like a tube, which was extracted, to the great amazement of all present; it adhered but very little, was otherwise of a cineritious

cineritious colour, and was as brittle as glass. It is true, the *aorta* near the heart, in men and brutes which have been long-lived, has been frequently found to be bony, and not membranous. But Piso observes that the tube perfectly incrusted the *aorta*, but did not adhere to it, as it was taken out intire. Besides, that this concrete was much more brittle than the bones are usually known to be.

Stones have been found even in the veins; but, as the motion of the blood through them is from a narrow to a broader diameter, it is wonderful that the stone, when it begins to concrete, is not carried to the heart.

It is less surprizing that the stones should be found in the *vena portarum*, because the venous blood, returning from the abdominal viscera, intirely falls into the trunk of the *vena portarum*, and thence by the canals converging, like arteries, into the liver. The circulation

culatation of the humors in the veins of indolent sedentary men is slow, and therefore may occasion concretions, especially if any thing adheres about the valves of the veins, or that the shape of the vein should be by any means altered by the pressure of some neighbouring tumor. It is most certain, however, that stones are much seldomer found in the veins than in any other parts of the body.

Since the cavity of the abdomen is always moistened by an exhaling vapour, which, when the abdomen of a living animal is laid open, sends out an urinous smell, it seems very likely that calculous concretions should be observed in this part as well as in the cavity of the thorax, the pericardium, and all other cavities of the body.

It has been demonstrated that the humors in the stomach, bowels, &c. contain the rudiments of a calculus, which, adhering to some indissoluble substance,

substance, may concrete to various sizes. LANZONI, in the belly of a woman (who had long complained of a violent pain in her stomach, of a nausea, want of appetite, and had had the best advice without any benefit) found ten stones, the largest of which weighed one ounce. But, as no mention is made in this account of an inward nucleus for these calculi, it may be doubted whether they were not biliary — but we should observe, that, in enumerating all the symptoms with which this woman was afflicted, not a word is mentioned of such as generally attend when biliary stones pass into the duodenum; besides, the biliary stones are generally very light, and therefore take up a large space, so that it is not probable that a stone of an ounce weight could pass out of the duodenum through the pylorus into the cavity of the stomach. Hence, though it be granted these ten stones
were

were originally biliary, yet that which weighed one ounce must have grown considerably larger in the stomach — for biliary stones may serve as nuclei. — Many cases might be produced to prove that insoluble bodies have served as bases, and formed nuclei to stones in the stomach and bowels — and this shews the folly, as well as danger, of swallowing fruit-stones and such insoluble substances; this it is in the power of every body to avoid, but there are some other accidents by which the nuclei of stones may be found in the intestines, which it may not be so easy to prevent — for we have known that the indurated fæces, by long continuing and adhering to the *intestina crassa*, have been so incrusted with a stony concrete, as to form a large body. — Such a stone, weighing two ounces two drachms and a half, and being light, and consequently of a very great
size,

fize, was obliged to be taken out with a forceps, and several incisions made in the anus to effect it — the woman lived for ten years together in a miserable condition, but, as soon as this was extracted she, got well in about a month.

Stones have also been found in the cavity of the *uterus*. — We meet with many cases of this sort in the writings of the learned; HIPPOCRATES relates one. Medical history, in short, abounds with instances of stones which have been found in almost every part of the human body, in the *mouth*, the tongue, the nose, the ears, &c. &c.

Many have been the disputes about the matter of which the calculi were formed. GALEN asserts it, as an incontrovertible point, “ that stones were
“ generated in those bodies the crassa-
“ mentum of whose humors became
“ concreted by the drying power of
“ heat.”

“heat.” — Great numbers of physicians after him adopted his opinion, and endeavoured to support it by various arguments; nay, some of them were so extravagant in their notions as to say that even sitting with one’s back close to a fire was sufficient to ingender a stone in the kidneys. Others, observing that of fluid milk cheese was made, which, by long keeping, became very hard, concluded that it might also form itself into concretions in the human body.

RUYSCH, DENYS, and others observe that calculous disorders are more frequent among the *Dutch*: and it is certain these people are fond of cheese, salt-fish, and meat smoked and dried in the air — to which kind of food many physicians charge the stone — and yet DENYS, who lived seven years in the *East-Indies*, says the numbers afflicted with the stone in that hot climate were
very

very few — and was astonished during all this time to find but two persons in *Batavia* who had been cut for the stone; they nevertheless feed upon the same sort of salt, dried, smoked, and pickled provisions, and drink water which comes down from the mountains impregnated with earthy and calcareous particles.

It may seem strange that women, who are more sedentary than men, should be less subject to the stone in the bladder. But the shortness, straitness, and breadth of the urethra in women afford an easy passage to any thing which may begin to adhere to the bladder; I think, however, that I have observed women afflicted with nephritic disorders, and stones in the gall-bladder, as often, if not more so, than in men; and this has been farther confirmed by physicians of undoubted character and veracity.

Yet

Yet boys are frequently calculous, though they are naturally active and fond of moving about. — But it should be observed that, in the very early part of life, their kidneys are compressed, and the free secretion and excretion of urine impeded by the abominable custom of swaddling them.

The reason why the children of poor people are more troubled with the stone than others is, that, in order to keep them quiet whilst they are obliged to attend to their labour, they give them opiates and other quieting drugs, which are frequently increased to a larger dose — when these infants come to their feet, they are, for the same reasons, confined to their chairs; it is no wonder, therefore, that they become rickety, bandy-legged, and subject to the stone, and other diseases. The constant use of water which con-

tains earthy, limy, and calcareous particles, is reckoned amongst the causes which are productive of the stone.

It is known that there are caverns in many places, in which we may observe a very water slowly dropping from the top, concreting into a pretty hard stone; such are found in the mountains of *Styria*, &c. and by drinking of this water some persons imagined that the stone might be occasioned — but these concretions by a chymical trial have been found to become water, leaving at the bottom a sediment of a merely fixed earth; the stones found in the human bodies, and in those of other animals, are, by chymical analysis, reduced to a very different matter.

The very learned and ingenious Dr. **HALES** thought, from the incrustations observed

observed on the sides and bottoms of vessels, in which common water had been boiled for any considerable time, that the same effect is produced from the same cause in human bodies; and that the water so incrustates the pipes which convey it through the streets of *Paris*, as to intirely stop them up; he imagined, therefore, that this might reasonably account why the *Parisians* are more subject to the stone in the bladder than the inhabitants of other places. — It is true that more people are cut for the stone in *Paris*; but it should be remembered that this city is the metropolis of a very large kingdom, and that great numbers flock to it from all the parts of it, as well as from other different places — not to mention the skill and abilities of the surgeons of that city, who are applied to for that purpose by such as were surely

Q 2

calculous

calculous long before they tasted the water of the *Seine* *.

Upon the whole, if we recollect what has been observed with respect to the urine of the most healthy persons, it will appear that the matter of which the calculus is formed is not *brought* into the human body, but that it naturally existed in the humors of the most sound constitutions, and therefore belongs to the animal kingdom; and we find that by chymical examination it produces substances analogous to the bones, hoofs, horns, &c. found in animals.

From a consideration of these circumstances, LOBB concluded, “ that

* It would be very unjust, however, if it were not observed here, that the surgeons of *England* are at least equal, if not superior, to any of what country soever, in performing this as well as every other capital operation in surgery, and certainly more expert as well as happy in their knowledge of the curative parts.

“ people

“ people violently afflicted with the
“ stone and gout should altogether ab-
“ stain from all animal food.” And this
because the flesh of all animals contains
every part which constitutes these two
diseases; *viz.* an alkaline animal salt,
animal oil, air, and earth. Now ani-
mal food is known to dispose our hu-
mors to putrefaction much sooner than
a vegetable diet. And HALEs observes
that; the more the urine tends to pu-
trefaction, the more of the calculous
matter it discharges; under these cir-
cumstances, therefore, a vegetable acef-
cent regimen may prove of use to such
people as are subject to the stone.

We are taught by *physiology* that, in
consequence of the constant circula-
tion of the humors as well as of the
action of the muscles, the lesser parts
of the solids are worn away, mix with
the fluids, and, floating in them, pass
off through the body — and that the

body would consequently be soon destroyed, was it not daily repaired by a supply of nourishment —.

When these small particles of the solids are thus separated from them, they become no longer necessary to its accretion, and they ought therefore to be conveyed thence by urine, stool, or by the *vasa exhalantia*.

Since we find the elements of the stone in the urine of the most healthy people, and since the separated particles of the solids, mixed with the excrementitious humors, pass by urine through the body, the origin of the stone is, with reason, ascribed to them; that is, when these particles unite, which before floated separately in the urine. Since, therefore, the matter of the stone is the separated element of the solids and fluids of our bodies, the reason will be evident why we find such a diversity in stones, according to the
the

the difference of the matter in their first formation, or according to the different proportions of the constituent parts of the stone.

The *lamellæ* of the stones are not always of an equal thickness; whence it is concluded that the urine does not always leave the same quantity of calcareous matter, or at least does not so copiously deposit it on the generating stone.

HALES is of this opinion. He thinks also that the sharper and deeper-coloured the urine is, the greater quantity of calcareous matter it contains; and he supposes therefore that the stone increases more in summer than in winter.

Chymical analysis proves the stone to be a concretion of animal matter. HELMONT, who was fond of adopting new names, calls the human calculus *Duelech* — “ I distilled, says he, a “ duelech by itself, but could procure
Q 4 “ nothing

“ nothing from it but a fetid spirit of
“ urine, a yellowish crystal, and an oil
“ such as is extracted from dried urine.
“ What subsided was a black, parched,
“ friable, and insipid earth.”

Frederic Hoffman made some experiments upon the stones taken from the human kidney; they were of different figures, colour, magnitude, solidity, and weight, and taken from different subjects. He found upon trial that they contained nothing of a *fixed alkaline* salt, nor of a stony or limy earth; but a *volatile alkaline* salt, such as is extracted from the parts of living animals. He will not allow any fat, oily, or sulphureous principle in the composition of the stone: but he did not make the experiment himself. We should therefore give most credit to those who relate what they have themselves been eye-witnesses of. *SLARE* analyzed many calculi, and from his
account

account it appears that there is an oil in their composition.

HALES, a gentleman of the greatest authority in these cases, discovered an oil in the human calculus, though in a less quantity than in the blood or solid parts of animals. He found, however, more of the oil in stones of the gall-bladder than in those of other parts; and this he ascribes to the bile adhering to and drying upon the surface of these calculi.

He observed that in the biliary and other human stones more than half their bulk was air; which quantity of air he could never extract out of any other body, animal, vegetable, or mineral. As soon as this non-elastic air is freed from its confinement, and recovers its elasticity, it occupies a space which is to the size of the stone as 645 to 1. From this experiment he formed hopes that a remedy might
be

be discovered to destroy the connection of the air with the stone, that so one half of it might intirely evaporate; and not only this, but that the air, being rendered elastic, might separate the elements of the calculus from each other, and destroy their cohesion: he was induced to conclude this principally, because, by the same power of the fire by which the air is expelled, white vapours are made to rise which, when condensed, afford a volatile alkaline salt, the like of which he conceived to be intimately connected with the air in the stone. Would not therefore this volatile alkaline salt exhale, if the air could be separated from the stone whilst it remained in the bladder? Or would not the other parts, upon the extraction of the air, easily disunite, so that the stone, falling into dust, might be washed away with the urine and so carried out of the bladder?

From

From the experiments of Dr. LISTER, VINCENT MENGhini, and other ingenious men, it appears that there are particles of iron in the human blood and in that of other animals; nay, that it is found in the ashes of the solid parts, and in the calcined sediment of the urine; it is not wonderful, therefore, that such particles may have at times been found in the stone. — But it does not at all seem to be demonstrated that these particles are always in the urine, or that they are in such proportion as to form the basis or hardness of the stone.

In a small treatise, published by BENEDICT STAECHLIN, an ingenious physician of *Basil*, and which is extremely well worth reading, we meet with many curious experiments which prove that there is a kind of glutinous matter even in flint-stones, in human calculi,

calculi, and in those of other animals, and indeed in them very copiously. He found this glutinous matter to be elastic, and thought that the confined non-elastic air adhered to it.

The last thing to be considered respecting these calculous concretions is, that they seem to bear a great affinity to the *tartar* of wine: the stone is dissolved in spirit of nitre, so is tartar; they are both (but more slowly) dissolved in oil of tartar; tartar moreover is formed from a pure limpid wine, the stone from a clear and sound urine. Tartar adheres to the sides of the vessel, and every-where on the surface of the wine; the same holds good with regard to the stone. Tartar incrustates orbicularly, and the side next to the liquor is furred, that next the cask is smooth; this is so with the human stone — Tartar is hard and friable, though it had floated in the most clear

clear wine; and its weight is less than that of common stones or flints — The calculus has the same properties. Tartar cannot be re-dissolved in wine, nor the stone in the urine in which it once floated. — HALEs therefore called the human stone an *animal tartar*, properly distinguishing it from the *tartar* of wine, which is *vegetable*. —

Having premised some things respecting the nature of the human calculus in whatsoever part of the body it may be found, it will be necessary to consider the diagnostic, prognostic, and treatment of the stone when in the kidneys, ureters, urethra or bladder: but, when the stone is in other parts of the body, we shall frequently be at a loss to know by any diagnostic sign how we are to proceed. If, for example, the pericardium should be covered with a calculous incrustation, or stony concretes be in the very substance of the heart,

heart, or in its cavities, the action of the heart would be interrupted, but we might not therefore suspect a stone to be the cause; and even if we could know it to be there, or in any other part of the intestines, &c. our knowledge would avail us but little, unless the stone could be extracted, or otherwise destroyed by any lithontriptic medicine.

The urine is secreted from that blood which the emulgent arteries convey to the kidneys: a fluid, therefore, which abounds with the elements of the stone, and from which these elements may be separated, should an obstruction somehow or other happen, passes through the kidneys during the whole course of our life.

An inflammatory spissitude at the extremities of the arteries, irresolvable blood, a small clot of it extravasated and concreted, drops of thick pus, several
grains

grains of sand, as it were, crystalizing together, may form the basis or nucleus of a future stone.

BERTIN, a very celebrated anatomist, has very well observed that the larger branches of the emulgent artery are so disposed through the substance of the kidneys, that the pulsation of the arteries may gently shake the urinary ducts, and so promote the expulsion of whatsoever may begin to concrete and adhere to them. But he remarked that the gravel in the *pelvis* is shaken by a double range of arteries, so that it may be propelled into the ureters, if any of it should adhere to the sides of the *pelvis*: as the same range of arteries is continued in the ureters, the same effect will be produced in them; now, if by these pulsations of the arteries the obstruction in these parts cannot be removed, it will gradually compact and condense, and, increasing

creasing in bulk, will be so pressed by the pulsation of the arteries upon the tender surface of the ureters against the hard stone as to occasion much pain, especially if the calculus be rough or ragged — Hence he derived the nephritic cholic and other disorders, which must arise when the stone, by it's size, distends the parts, or, by its rough surface, injures or tears them.

When a man stands upright, the urine secreted in the kidneys easily passes off by the ureters into the bladder; nay, the gravel and smaller calculi, assisted by their own weight, and provided they are less than the cavity of the ureters, in this posture, quickly descend. But this is not so when a man lies down; for then the urine is not so easily secreted, and the elements of the stone can subside in the urine whilst it remains in the *pelvis*, or its *infundibula*, which receive the renal *papillæ*.

I once

I once remember to have seen a man (who was never suspected to be subject to the stone) confined to his bed for ten weeks upon account of a fracture of the thigh. Some few weeks after his recovery, he had a nephritic cholic, and, after suffering a good deal of pain, discharged a pretty rough stone, and was ever after subject to the same complaint. Gouty people are for the same reason very frequently troubled with stones in the kidneys; SYDENHAM felt this in himself, and observed it likewise in others. It is the universal opinion of physicians that a long confinement to a bed will bring on a calculous disposition, or increase it wherever it pre-existed. And this was formerly imagined to be occasioned by the too great heat of the kidneys, contracted from continual bed-lying. — This, however, is now exploded; and much better

and more satisfactorily explained by HALEs. He says, when we lie horizontally, the descent of the urine from the kidneys into the bladder cannot be promoted by the action of gravity. When we lie on the right or left side, either one or other of the kidneys must be lower than the bladder. If we lie on our back, both must be lower; or they are at least on a level with the bladder; the urine will consequently be easily collected in the *pelvis*, and the elements of the stone separate themselves from the urine, as well as in the ureters. But, since in this posture the urine may pass into the bladder, either the expelling power of the kidneys, or the propelling force of the ureters, must be necessarily greater than the power of gravity whilst the bladder was more elevated than the kidneys; the bladder too, which is always contracted

ed when it is empty, must by the urine be distended, and the parts which are about it displaced; hence it will follow, that, when the bladder is full, the urine, so collected in the pelvis and ureters, will be repressed with a considerable force against the orifice of the vessels which excrete the urine; thus will the passage of the urine into the bladder be retarded, and that gravel have time to concrete, not only in the pelvis but in the *Bellinian* ducts; and this accounts why gravel is so frequently found in those parts upon dissection. People, therefore, when in an erect posture, make more urine awake than they do during their sleep.

These precepts of Dr. HALEs are certainly of great consequence, as they respect the care we should take of our posture in sleep, so as to prevent the stone in the kidney. The

R. 2

horizontal

horizontal posture may be injurious for another reason, *viz.* because the whole weight of the abdominal viscera presses upon the kidneys, and must therefore undoubtedly disturb the secretion and excretion of the urine. Fat people are frequently afflicted with stones in the kidneys, because those parts are, as it were, buried under a load of fat, as we may easily observe when we kill well-fed and fattened animals. The vessels passing, from the kidneys and the pelvis, are covered all over with fat. When the protuberant uterus, in the time of pregnancy, raises the intestines, and draws them back and to the sides, it may disturb the functions of the kidneys, pelvis, and ureters. It has not been unfrequently seen that women, after first childing, have been subject to nephritic disorders, though they

they had never been so before, especially if they have had twins.

PRISO observed that of a hundred nephritic patients more than fourscore complained of their left kidney; and this he believed was because the spleen lodged the ichorous *faburra* of the atrabiliary blood in the left kidney rather than in the right. In his days, the prevailing opinion of the then physicians was, that the spleen was the repository of the *black bile*. It may be questioned whether it is not more customary to lie on the left than on the right side. HOFFMAN thought that nephritic pains in the left kidney were more frequent, because the *colon* is often distended with wind, or indurated with *fæces*, and so presses upon the left kidney. Hence we learn the use of emollient clysters, which are of service not only because they discharge those hardened *fæces* and the

R 3

wind,

wind, but as they ease the kidneys of such a pressure.

So long as the calculus, concentered in the kidney, is neither large nor rough, nor sharp-pointed, it may remain there without much inconvenience. Hence we frequently find stones in those parts upon dissection, which, from any appearance through life, we had no reason to suspect would be there. But, when the stone becomes large, rough, and pointed, we may easily conceive that the kidney will be much and greatly injured by it. If a thorn in the finger is sufficiently painful to occasion an inflammation and suppuration, by which, when the abscess breaks, the thorn comes away with the *pus*, we may easily conceive that this will be the case, when the substance of the kidneys is continually irritated by the sharp points of the stone; that clots of concentered blood will

will burst from the wounded vessels, and that a part of this substance will either separate from the *pus*, or, lacerated by the stone, be carried off with the urine, in the shape of caruncles or skins —.

HIPPOCRATES has observed that, in the suppurated kidneys, some harder substances come away with the urine (these he called *σάρκιναι σκινυαί*) and seemed to be semigangrenous. They may likewise be rubbed off by a rough stone. GALEN says, “ We may certainly know that the kidneys are ulcerated when small caruncles are discharged with the urine; for they are parts of the substance of the kidneys, which are torn off by the sharp corrosion of the ulcer.” These caruncles are sometimes of a larger size. Pieces of the kidneys, as big as a thumb’s breadth, have passed the penis with excessive and ex-

cruciating pain. Fourteen pounds of *pus* have been known and found collected in the kidneys. The whole substance of them was so destroyed by this weight of matter, that nothing except the outward membrane remained. Another reason may likewise be assigned why caruncles separate from the diseased kidneys rather than from any other viscera — HALLER has observed that the kidneys have *papillæ* uncertain in their number, sometimes twelve, thirteen, &c. these are so distinct in a foetus, that the kidneys seem to consist of as many small kidneys, as there are *papillæ*; and these little kidneys have every thing in common with those of grown-up persons; each of them has separately a cortical substance formed of small winding vessels, and its complement of strait urinary vessels; in adults a thicker cellular web brings these

these papillæ together which were before separated, and unites them into one kidney — and yet will it almost return to its pristine state, if the *tela cellulosa*, which made this union, be relaxed by the injection of water into their vessels. — Such a disunion, therefore, may happen when the substance of the kidneys is soaked by a collection of *pus*, or a long retention of urine in the *pelvis*. Add also that the extremities of the *papillæ* may project beyond the substance of the kidney, and, adhering to the branches of the *pelvis*, be easily injured, and torn off by the calculus.

The kidneys will frequently rot away and be destroyed by the pressure of a great number of calculi, and one large stone may produce the same effect. RUYSCH, in the body of a woman of about forty years of age, found a large stone adhering in the
left

left kidney, partly to it, and partly in its *pelvis*—in size and shape it resembled a large piece of ginger.

But, when stones do not only destroy the substance of the kidneys, but irritate and inflame the neighbouring parts also, a suppuration will follow, the *pus* will break out in fistulous ulcers of the loins, from whence stones of various sizes have been observed to issue.

The *pelvis* is so situated as to be acted upon by the pulsations of the emulgent artery, which dislodge the gravel beginning to adhere in the *pelvis*, wash it away with the urine, and carry it into the ureters. For this reason calculi do not so frequently form themselves in the pelvis of the kidneys as they might else otherwise do without such assistance.

A great deal of fat surrounding the kidneys is a principal cause of detaining

detaining a stone in the pelvis. For anatomists observe that the *sinus renalis*, where the renal vessels enter and go out, and where the lower part of it projects, is intirely covered and loaded with fat. EUSTACHIUS found this fat sometimes so hard and concreted as almost to equal the hardness of a stone, and with this sort of fat more than once saw the kidneys oppressed and obstructed, and even worn away as it were. —

When the stones pass from the pelvis into the ureters, they will be apt to stop there, unless they are small enough to push forward into the bladder. They often stick and choke up the ureters, and become so large as to fill their whole cavities and so prevent the discharge of the urine from the kidney into the bladder. Whenever this happens, a mortal ischuria must be the consequence.

Attentive

Attentive physicians distinguish whether the obstacle which prevents the discharge of the urine be in the kidneys, ureters, or in the neck of the bladder. If it be in the lower parts about the bladder when filled and distended with urine, the bottom of it may be touched above the *os pubis*, and the obstruction removed by introducing a catheter, or by puncture: the patient too will in this case feel a considerable tension and pain about the *pubes* and *perinæum*. But, if an *ischuria* should happen at a time when the bladder is empty, we may certainly conclude that the obstruction is somewhere higher, in the ureters or in the kidneys.

After the calculus has descended from the kidneys, it has some way to pass before it arrives at the bladder; for, though the ureters are moistened internally with a lubricating mucus,
are

are long and round, and, by their elasticity, may forward the passage of the stone, yet it is often observed that calculi adhere in these parts, and very much increase their bulk. I have formerly remarked that the inward surface of the ureters is ragged; hence the calculus, especially if it be sharp and rough, may be stopped in its passage to the bladder. In my account of the *nephritis*, I observed that long continued spasmodic contractions of the vessels should be accounted amongst the causes of nephritic disorders; it must likewise be remarked that an *ischuria* had attacked people, the first time of a stone's descent through the ureters into the bladder. For a stone which in a few days was discharged with the urine was, though rough, so small that it seemed not credible that it could have stopped up the cavity of the ureter, and

and there was not the least reason to suspect the other kidney was affected also. — This case is corroborated by the case of a woman who died of an ischuria on the eleventh day after her delivery. Her bladder was empty. Nothing preternatural was found inwardly, excepting an inflammation in both kidneys; they were not swelled. A rough stone, of the size of a pea, was found in the left kidney, which could not, most certainly, have so blocked up the passages as to occasion an *ischuria*; it was rather occasioned by a spasmodic contraction. But of all others the greatest obstruction to the passage of the calculus through the ureters is about that part where the orifices of the ureters open into the bladder — for there the ureters run for some space amongst the membranes of the urinary bladder, and where their extreme orifices become narrowest. Whilst the calculus adheres in this part, if
nay,

it intirely obstruct the passage of the urine while it is continually excreting from the kidneys, the *ureters*, as well as the *pelvis*, will be gradually filled.

We know, by the law of hydrostatics, that the bottom, sides, and covering of a vessel are pressed by the particles of a fluid immediately touching them; and, since the pressure increases in proportion to the altitude of the fluid, and depends merely upon the altitude itself, and not upon the quantity, it is evident that in this situation the stone must be violently pressed upon, and at length with intolerable pain frequently forced out of these narrow channels into the cavity of the bladder; and, since the sides of the vessel, containing a fluid, are pressed with as much force as the bottom, we see the reason why the pliant sides of the *ureters* are in this case so stretched; nay, even the kidneys, which may
be

be considered as the covering of the vessel, are dilated.

From such a distension of the ureters, even by the injury done them by the roughness of the stones, an inflammation, with its usual consequences, may reasonably be apprehended.

When the kidneys suppurate, there is no doubt but that the *pus* may pass from them into the cavity of the ureters, which may be immensely distended by it, if the passage through them into the bladder be impeded.

RUYSCH gives us a case where he found the ureter so immensely distended that it contained a pint of purulent matter at least. Although the size of the calculus be greater than the natural cavity of the ureter, yet it may possibly descend into the bladder; for the ureters are dilatable, and, when the stones begin to adhere,
press

press it forward by their elasticity. Their internal surface, as was just before observed, is continually moistened by a lubricating mucus, which forwards its descent; when the stone is in its passage from the pelvis to the ureter, it is generally attended with a frequent and violent vomiting; the concussions occasioned by it favour the descent of the calculus.

It sometimes happens that after an inflammation of the bladder, upon taking a sharp diuretic, or for some other unknown cause, an internal membrane of the bladder comes off, floats in its cavity, and, being an insoluble substance, attracts a calculous concretion. I saw a similar membrane, after a supuration of the bladder, discharged with the urine, which, when folded up, appeared to be large enough to have filled the cavity of the bladder; yet this membrane had no marks of a concreted calculus about it, as it seemed not to have remained long enough

in the bladder before it was discharged.

It is observed that people, who have for a considerable time been afflicted with the stone, discharge a very pale and foetid urine; for while the outward surface of the stone, by the fresh application of calcareous matter, is still soft and spongy like the pumice-stone, it imbibes and long retains the urine, which, putrefying, emits a disagreeable smell, till, by its constant rolling, and by the compression of the bladder, its surface becomes harder and smoother; but, when once the putrefaction begins, all the urine passing from the kidneys into the bladder becomes corrupted in a very little time, and adds fresh matter to the calculus. It appears that the greater part of that which gives colour to the urine is not only pale, but so putrid as to be offensive
both

both to the patient as well as to those who attend him.

The renal stones which fall into the bladder are most commonly the *basis* or *nuclei* of the stone in *vesica* — we sometimes find in these renal stones themselves, if they be soon voided, a nucleus; and, since the gravel itself is very frequently found to be red, and the renal stones are sometimes, though not always, of the same colour, we must not therefore conclude that the *nucleus* of the stone in the bladder is always red. I have observed stones of different colours voided by the same person; nay, I have seen the first elements of the calculus, in the urine of one and the same person, differing in colour from each other.

It is very probable that the urine does not always contain the same quantity of calculous elements, nor always secrete them with equal facility. The

stone, by its rolling about in the cavity of the bladder, and its powerful compression whilst it expels the urine, acquires a polish on its surface, which continues so, till, the urine having collected some fresh calcareous matter, it adheres to this polished surface, and makes it rough again ; and this is the reason why we feel more or less pain in proportion to such concretions. When the stone passes from the kidneys into the bladder, the patient feels much less pain than before : if the nephritic pain was very violent, he usually complains for a day or two of a troublesome oppression about the kidneys, and the whole length of the ureter — but when these stones, which are not large, are once conveyed into the bladder, they will give very little trouble — but the patient must not depend too much upon the ease he feels, since the stone, unless it be soon removed,

moved, may occasion greater mischief by growing larger; and, if it be sharp-pointed, it must greatly injure the sensible internal surface of the bladder, which, when empty, contracts itself. The bladder is well furnished with nerves from the crural nerves, and from the inferior *plexus mesentericus*. We may judge of its sensibility by the stranguries occasioned by acrid urine, and from the loud cries and grievous complaints of those who are afflicted with the stone. It is very clear that the bladder, during its state of contraction, must be inflamed by the frequent pressure and attrition of a sharp or rough calculus in particular; and since the same cause so often occurs, and the parts are constantly washed by a sharp and acrid urine, there is little room to hope we can remove the inflammation, or prevent a suppuration and a purulent discharge of urine. Nor can the ulcer

be cured so long as the cause exists. — But, if the stone is extracted, and the patient be in the vigour of life, the cure may be very soon and very happily effected.

It sometimes happens that the bladder of calculous people is so inflamed that the *pus* cannot pass freely into the cavity of the bladder, but is collected about, and adheres to, the very substance of the incrassated bladder. RUYSCH relates a case of this nature.

When a skilful *Lithotomist* perceives no disagreeable smell in the urine of calculous people, he may conclude that the stone in the bladder is hard indeed, but smooth; if on the contrary the urine sends forth a nauseous and disagreeable scent, he may foretel that the stone is hard, rough, and sharp.

We may well imagine that the ulcerated bladder and its neck, which are so highly sensible, must be continually

tinually irritated by so sharp and putrescent an urine, and be frequently attended with a tenesmus, since but a little can be evacuated, and that with such acute and intolerable pain, as even to be more piercing than the operation itself. I saw an old man of sixty-three expire in a violent attempt to make water: a mortal syncope came on, and his face, which was much distorted by straining, presently returned to its usual form, so that he appeared to be in a sweet slumber.

Boys afflicted with the stone are subject to a *prolapsus ani*, because it presses upon the *rectum*, and so occasions frequent, though fruitless, inclinations to go to stool —.

An hectic fever and consumption, may be occasioned by a stone in the bladder — for in this case people are so overpowered with pain, with want of sleep, so afflicted with constant apprehensions,

hensions, and so anxious about the consequences from an operation which is attended with so much uncertainty as well as danger, that it is not at all surprising that a lingering hectic and consumption should succeed. Moreover it is to be considered that, if a free passage of the urine and *pus* cannot be made, they may, by mixing together, quickly bring on a putrefaction. — Now should this putrid matter be absorbed by the veins, it may infect the whole mass of humors with a *cacochymia*, or, should it be deposited upon the viscera, it may in either case be productive of a hectic fever, or a consumption of the most putrid kind.

The patient soon dies of an ulcer in the bladder caused by a stone, unless he will or can be relieved by undergoing the operation: but in a supuration of the kidney, if the *pus* has not

not a sufficient and ready conveyance with the urine, a consumption will frequently happen, and continue for some time; whilst the other kind, much larger, perhaps, in size, and quite sound, secretes the urine, and carries it into the bladder. I have seen some who for two years and more had every symptom of a stone in the kidney and discharged *pus*, with the urine, gradually become consumptive, and debilitated by a slow and hectic fever. I have again seen others who, after a long and constant discharge of purulent urine, have lived in tolerable health, even when the urine became perfectly clear. In such cases the substance of the kidney is so destroyed by the supuration that its external membrane only remains, thick, indeed, and callous, and containing some stones. I observed such a circumstance in a man who

who lived upwards of six years in good health after such a suppuration.

If a calculus sticks in the urethra and fills its cavity, so that the urine can by no means pass off, it will bring on an *ischuria*, the bladder will be immoderately distended, and, if the obstruction cannot be removed, death must ensue. But when the calculus is so placed in the urethra, as to permit the urine to pass, though it be only *guttatim*, the disorder will be more tolerable, and can often be borne for a very considerable time; a remarkable case of which we find in the Medical Essays, abridged from the Philosophical Transactions, vol. i. p. 182. We should be very circumspect before we finally determine and give our opinions about this disorder, when we consider that the parts contiguous to the kidneys may create pain, tension, &c. which we may be led to think exist in the kidneys

kidnies themselves; a close attention to the symptoms will serve to undeceive us. GALEN honestly confesses that he had been deceived — he felt a violent pain, as if a sharp-pointed instrument had been thrust into his body in that part more particularly where the ureters extend on either side from the kidneys into the bladder; but, on discharging a vitreous *pituita* by the anus, the disorder went off. His words are, “I thought that a stone was stuck in both my ureters, and was the cause of that sharp perforating pain I felt; but, when that ceased upon the discharge of the humor, it was evident that a stone was not the cause, and that neither the ureters nor the kidneys were in fault.”

SYDENHAM was thoroughly persuaded that he had a stone in his kidneys, because of a long and severe confinement to his bed in his fits of the gout,

gout, as well as that he felt a weight about the kidneys, and made bloody urine whenever he rode in a carriage over the stones.

If a stone of any size be lodged in the kidney, the patient often feels an obtuse, dull pain about the affected part; if the stone be sharp-pointed, he will frequently perceive a pricking, especially when he bends forward; an inflammation in this case of the kidneys, and all its consequences, are to be apprehended. But, if the stone be large, but not rough or pointed, it may remain in the kidney for a considerable time without producing any other sensation than that of a dull, slight, heavy pain.

This SYDENHAM experienced in himself when he had been confined to his bed for two months with a fit of the gout; he felt a dull, obtuse pain, chiefly in his left, though sometimes in his right,

right, kidney: this pain returned at intervals, but never intolerably; for he was not at all afflicted with that nephritic paroxysm which is accompanied with a violent pain along the ducts of the ureters, and with an enormous vomiting; he reasonably judged therefore that he had a pretty large stone in the pelvis, which, as it was too big to pass from that into the ducts of the ureters, did not bring on the above-mentioned symptoms; for the stone rested in his kidney, and all these symptoms happen in consequence of its moving; hence we see why large stones remain long without much uneasiness in the kidneys, when smaller ones may occasion much pain and trouble in their passage through the ureters into the bladder. It is very easy to account for why by violent exercise, frequent riding on horseback, or in a carriage over a rough pavement, a hard stone may so injure the

the tender vessels of the kidneys as to occasion an hæmorrhage or bloody urine: if the blood comes away soon with the urine, it is of a lively colour; but, if it happen to be long retained in the bladder, it becomes thick, brownish, and somewhat like coffee —; when such urine is discharged after having felt a heavy, obtuse pain, attended with a slight nausea or inclination to puke after some bodily exercise, we may conclude that there is a stone or stones in the kidneys.

It is observed that the motion of a carriage makes people urinate more frequently than usual; they must therefore secrete more urine, and the humors will therefore be carried with a greater momentum towards the *vasa secernentia*; this will produce their dilatation, and, if their diameters be so increased as to admit the red part of the blood, the urine will certainly become bloody —.

Though

Though SYDENHAM observed in himself and others that a stone might lodge in the kidneys, provided it be sufficiently large, for a considerable time, without the least inconvenience or trouble, yet smaller ones in the *pelvis* and ureters occasion a good deal; — vomiting, griping pains, fever, &c. till, by the frequent concussions in vomiting, and the violent motion of the body, which the patient throws himself into to obtain ease, the stone at length descends into the cavity of the bladder; and this is the nephritic colic.

ARETÆUS describes the symptoms of a moveable stone in the kidneys, as follows: *ἢν δὲ ἐμφραχθῇ ποτὲ τῇ κοιλίῃ μεζῶν τελευθεῖς*, &c. “ If the stone lodges in the
 “ cavity of the kidney, it causes pains
 “ about the *psoas* muscles to the very
 “ ribs, like those in a pleurisy; a
 “ weight also upon the hips, a diffi-
 “ culty of stooping, or even on bend-
 “ ing

“ ing the head — but, if the stone
 “ passes into the ureter, the patient
 “ shakes as if he had an ague, and
 “ the passage of the stone into the
 “ bladder occasions great and violent
 “ agitations — when it is arrived in
 “ the bladder, the urine is copiously
 “ discharged, as also the fæces; they
 “ break a good deal of wind, the sto-
 “ mach is distended, and they belch,
 “ and so relieve all the former symp-
 “ toms.” ÆGINETA mentions a pain
 of the testicle and a numbness of the
 thigh on the same side. — It is univer-
 sally known that there is an intimate
 connection between the kidneys and
 genitals. CELSUS, when he treats on
 this subject, says, *Renibus vero per-*
cussis, dolor ad inguina testiculosque de-
scendit. Whilst the stone is passing
 from the kidneys through the ureters
 into the bladder, or sticks by the way,
 it not only affects the parts through
 which

which it passes; but it may occasion very surprising disorders in other parts, and differently in different subjects. —

Piso, who was himself frequently troubled with a stone in his kidney, observes, “ that the descent of the
“ renal calculus through the ureters is
“ distinguished as follows, over and
“ above the common symptoms; by
“ a revulsion of the testicle correspond-
“ ing to the contracted ureter, by a
“ strangury, then by an itching of the
“ *glans*, frequent micturition, by a
“ stupor, or trembling of the leg cor-
“ responding to the affected kidney or
“ contracted ureter, and lastly is at-
“ tended with a chilliness of all the
“ extremities. These symptoms may
“ not attend all people alike, but I
“ have experienced them in the de-
“ scent of the stone through the ure-
“ ters, at the time their contraction was
“ strongest.”

The most obvious signs of the removal of the renal calculus are a pricking pain in the side rather than in the back, and this frequently coming on suddenly, with a nausea, vomiting, restlessness, and a continual moving from one posture to another. These symptoms denote that the stone is not too large, and is arrived at the narrow membranous passages; for the larger renal calculi cause bloody urine upon motion, exercise, or riding in a carriage, but do not bring on a nephritic fit. The greater the pain, the shorter will be the paroxysm.

The diagnostic signs of the stone in the bladder are not so easy as the unskilful may imagine. I have known some very great and ingenious lithotomists confess they had been deceived by symptoms which they imagined pretty evident that the calculus was there, but which in fact were produced by other causes.

DENYS

DENYS says he was sent for to a man who for many years had all the symptoms of a stone in the bladder, and that, to such a seemingly evident degree, that he even thought it needless to introduce the catheter into the bladder to feel for it — but advised the operation without farther delay. — He did, however, introduce the catheter, which would not pass into the bladder; in order that he might discover the reason of this obstruction, he thrust his finger up the *anus*, and felt the *rectum* so pressed by a hard tumor, as to imagine the whole bladder blocked up with one intire stone. He did all in his power to get up the catheter into the bladder, which at length he effected; when *pus* immediately issued forth through the tube of the catheter in the quantity of near twenty ounces, and, though he very carefully searched the whole cavity of the bladder, yet could he find no stone whatever. The pa-

tient promised to return to have his wound dressed, but never did — about a year after he saw him in perfect health, free from pain or any difficulty of making water, in every particular able to follow his daily occupation. He farther assures us that he has sometimes instead of a stone found the whole surface of the cavity of the bladder callous, and even cartilaginous; and adds he had known this to be more frequently the case in women who were supposed to be calculous. I once attended a single woman with this very same able surgeon; she was about forty, and had all the symptoms of a stone in the bladder; when he attempted to pass the catheter, he met with an opposition from a hard substance in the *vagina*; the patient, who had hitherto concealed it, now confessed that was a *pessary* which she had for a *prolapsus uteri*, and which had

had been aukwardly prepared as well as applied by a midwife ; upon removing it, and passing the catheter again, no signs of a stone appeared, but the whole neck of the bladder was scirrhus. In a person who had many, if not every, symptom of a stone in the bladder, the following circumstances presented themselves ; the bladder was hard, whitish, not only filling up the whole *pelvis*, but rising for some fingers breadth above the *os pubis*, with a protuberance as big as an infant's head — in the midst of which was a dent, scarce sufficient to hold a nut ; the ureters were distended throughout their whole length to the size of one's little finger ; yet, notwithstanding all these circumstantial appearances, were neither gravel nor stones found either in the kidneys, ureters, or bladder. Whilst the stone is small and remains in the cavity of the bladder, it will give very little pain

or uneasiness; but, the very moment when it gets into its narrow neck, it then gives exquisite torment, more especially if it be ragged and sharp-pointed.

Now, if on the first attempt to make water the stone gets at the orifice of the neck of the bladder, in that case before the water comes away there will be much pain and a *teneismus*; if the water passes off a little, and the calculus be pushed forward with the remaining stream of urine, and sticks at the neck of the bladder, it will occasion the same inconvenience, and the water will in either case be suddenly stopped, or will pass off, with much straining, drop by drop, between the stone and the neck of the bladder. If, when the urine is discharged, the sphincter of the contracted bladder be closed, unless the small calculus can be forced by its efforts into the cavity,
the

the painful *tenesmus* will continue a long while, and occasion most intolerable pain, even after the urine is passed off. LE DRAN asserts that, if a small stone be in the neck of the bladder, the pain ceases as soon as the first drops of water have been discharged; if a larger stone be in the bladder, the pain will be greatest towards the close of making water; but, if the pain continue all the time of pissing, we are then to be assured that it is more owing to a disorder of the bladder than to a *calculus*. Yet, if a small but sharp-pointed stone be in the neck of the bladder, the pain will be the same all the time we are making water, since it is pushed to the sides of the neck of the bladder, and so produces a continual pricking sensation. — I have sometimes seen such small stones very happily discharged, after having been very troublesome and painful for some

weeks. When the stone is too large to pass into the neck of the bladder, yet it may stop the passage of the urine, if it lie upon the orifice, and is of a smooth surface.

When the stone either by its situation impedes the discharge of the urine, or by its size prevents the contraction of the bladder, it is attended with a *tenesmus* or continual inclination to make water, and an immense pain, almost to distraction. It is true that the painful strangury, singly considered, is not always a certain sign of a stone in the bladder; for an inflammation of the bladder and *rectum* will produce the same symptoms: it often happens upon using *cantharides*, or drinking stale beer, &c. — but, if other symptoms, which we know accompany the stone, are present, then we may, from this additional complaint, justly conclude that there is one in the bladder.

HIPPO-

HIPPOCRATES might therefore have founded his opinion of a tubercle of the bladder, and to have distinguished it from the stone; because the former was attended with an unremitting pain and strangury, whilst the latter gave some ease, as the patient occasionally changed his position.

A pale urine, charged with a great quantity of thick foetid *mucus*, is deservedly considered as a symptom of much import; for it will always be found so when the stone has long occupied the cavity of the bladder, more especially, if it be of a larger size, so that the sides of the contracted bladder may be rubbed by the stone. But where the stone is small, and just passed from the kidneys into the bladder, I scarce ever remember to have seen such a settlement in the urine, because it can scarcely irritate the bladder, even in its most contracted state.

But,

But, when a large stone is in the bladder, we may observe an incredible quantity of viscid glutinous matter voided with the urine; not intimately mixed with it, but falling down to the bottom of the pot, the moment it is made; the pale, and at the same time foetid, urine swimming on the top; if the urine be gently poured off, the sediment will remain; and, if the vessel be a good deal inclined, the sediment will not come away gradually, but the whole will fall plump into the pot — it is generally of an ash-colour, and is so abundant as sometimes to fill half the vessel, nay sometimes more; I observed this in a man who had for many years been afflicted with the stone, and in whose bladder we found three stones of a tolerable size.

Some have taken this sediment for a pure *pus*. It is true, indeed, that a stone, if it be rough and sharp-pointed, may so injure the bladder as to cause an

an inflammation and suppuration, and thus generate *pus* — but, when you shake it with the urine, it easily mixes with it — this however can never happen with respect to the viscid mucus we are speaking of.

GOULARD, in treating of the disorders of the *urethra*, observes that a copious discharge of *mucus*, produced by the irritation of the urinary passages, has been often mistaken for *pus* —. All these reasons, considered, induce me to believe the viscous sediment discharged with the urine by persons afflicted with the stone is not properly a pure *pus*, and ought not therefore to be esteemed as certain signs of an ulcerated bladder.

It should be noted that the internal surface of the *rectum* is covered with mucous glands which form and excrete the *mucus*, which will be in proportion more in quantity as the *rectum*, for
some

some cause other, may be more or less irritated : thus in a dysentery we shall, towards its conclusion, observe a tenesmus and a mere discharge of slimy mucus — and that the *rectum* may be irritated by a stone of the bladder is very evident, as we may see in boys afflicted with the stone, who, by their constant straining for a stool, bring on a *prolapsus ani*.

It may be questioned whether the urine, which contains this viscid matter excreted along with, it does not contain a chalky matter as well as the *mucus* also ? What are the properties of this chalky matter ? Or is this matter found in some kind of stones more than in others ?

Sometimes a pain, but much oftener a very troublesome itching of the *glans penis*, is felt, which is considered as a symptom of the stone. ARETÆUS says, αταρ ηδε προκοποι τα αιδοια, &c. “ they frequently

“ frequently have an erection; and,
“ when they make water, and the stone
“ is troublesome, they rub and pull
“ their member as if they would pull
“ out the bladder and *calculus* together.”

Amongst the signs of a *calculus* in women, CELSUS says, “ *Fæminæ vero*
“ *oras naturalium suorum manibus ad-*
“ *motis scabere crebre coguntur. Non-*
“ *nunquam si digitum admoverint, ubi*
“ *vesicæ cervicem is urget, calculum*
“ *sentiunt.*” The inward membrane of the bladder stretched out, as it were, seems to line the *urethra*, and, turning back towards the end of it, covers the *glans*, which is joined to a spongy body incircling the *urethra*; hence it does not appear so wonderful that the *glans penis* should be affected by the irritation of the internal surface of the bladder.

A tenesmus is a very common symptom in calculous people, particularly if the stone in the bladder be large. For,
when

when a violent effort is made to discharge the urine, the stone presses upon the neck of the bladder and irritates it as well as the *rectum* —.

No prudent person will perform the operation of lithotomy, if, on searching, he find the bladder in its most contracted state to have a cartilaginous hardness. But above all he should be very cautious how he absolutely determines about it. If he should plainly touch the stone, and should, by gently striking it with the catheter, hear the sound of an hard resisting body, he must know there is certainly a stone there. Yet we should not condemn them who, either before or after him, upon examining the patient, should not find a stone — for in this case I have known men of the most acknowledged reputation and abilities sometimes deceived.

I remem-

I remember an old *litbotomist* who candidly confessed that his own mistakes had taught him to be more guarded; if upon examination he did not find a stone, he never asserted that there was none, but only said, that he could not find one.

Some ingenious surgeons who attended a nobleman afflicted with every symptom of the stone in the bladder, having searched him, unanimously confessed that they could feel no concretion. — The patient went to *Padua*, to put himself under FALLOPIUS, who, from the several symptoms which accompanied the disorder, concluded that there was a stone in the bladder; yet upon introducing the *catheter* he could not touch it; the patient returned to *Mantua*, and, after having suffered a great deal of pain, died. A stone of a considerable size was found in his bladder, covered with a great deal of thick

thick slimy humor, surrounding it like an eel-skin —.

Many instances may be given of stones having been found in the bladder covered with membranes, and even membranous follicles —.

It even happens in some cases that the sides of the bladder form, as it were, a bag, and contain a stone, which, when it falls into the cavity of the bladder, may be easily felt with the catheter; but otherwise it cannot, as when by violent straining and contortions of the body it returns to its former situation. It may be questioned whether the bladder, when stretched out into such a bag, may not pass through the abdominal ring, and cause what is called a rupture of the bladder —.

DENYS would never perform the operation but when he felt the stone, although he was certain from a former
examina-

examination that there was one in the bladder; for he very shrewdly feared he might hurt his patient by introducing the *forceps*, and searching a long time to no purpose, as well as injure his own character. It is very evident from many critical instances, that it is not always in our power to lessen the size of the stone in the kidney, and so to expel it; all that is to be done in this case is to relieve, or, if possible, to remove, as much as we can, the disorders which are occasioned by it. That this may be done seems evident from the many accounts we have of stones which have been found in the kidney upon dissection, which were never so much as suspected when the persons were living —.

A moist, spare, and light diet is of service to such as have a stone in the kidney. HELMONT was surprized that physicians should forbid the use of salt

in these cases, and yet assign no reason for the prohibition. He says that he never knew the frequent and free use of salt-water to be in the least hurtful; but rather that he had carefully observed many who, by a copious and free use of salt-water, have prevented the increase of a recent growing stone. In another place he recommends spirit of sea-salt taken with white-wine, “for
“ this medicine does not only cure the
“ severe strangury of old men, but it
“ has much diminished the stone, and
“ discharged it by urine, though it
“ has been somewhat large, but dis-
“ engaged from the kidney and got
“ into the bladder; though before
“ that it very frequently blocked up
“ the neck of the bladder, and had
“ been obliged to be often repelled by
“ the catheter —.”

STAECHLIN confirms this by many experiments. And he asserts that what-
ever

ever can put the air which is in the stone into a state of activity is a dissolvent of it — and that salt-water is the most proper *menstruum* for hard stones in the beginning.

It has been observed that human and all animal calculi, nay, even flint-stones, contain a glutinous matter soluble in water. Upon destroying this matter, the cohesion of the other parts of the stone is lessened, and the stone breaks, nay, by being left in water, dissolves sooner or later in proportion to its degree of hardness. Dr. HALEs says, that he put some stones at the same time in cold and warm water, and found those in warm water dissolved much sooner than the other, they being covered with a white *mucus*. Copious and large draughts of water, or of a thin watery liquor, may therefore dissolve a stone in the kidney, as it is continually moistened by a thin,
U 2 watery,

watery, and warm urine. The *nubeculæ*, or clouds, which hang suspended in the urine of healthy people, have been found, upon experiment, to contain the elements of a *calculus*; but, when this urine just made is diluted with thrice its quantity of water, the *nubeculæ* will either not concrete at all, or very slowly; thus, by drinking freely of diluting liquors, may the increase of the stone be impeded; and some hopes, indeed, be entertained that the stone will dissolve; which is the more likely to happen, the more the urine is dilated. HALEs remarks that the stone was not very easily dissolved in warm water, when thirty-nine cubic inches of water were mixed with one of fresh urine —.

Whey, made of the milk of animals which feed upon nothing but grass, freely drank, is also very serviceable. SYDENHAM, in lieu of eating a supper, generally drank a large draught of small-beer on
going

going to rest, to relieve the pain from a stone in his kidney. Some looked upon the relaxation of the kidneys as a cause of a calculous *nephritis*, fearing that the relaxed renal tubes might give an easy reception to those hard substances which form the elements of a stone, should it remain long in the *pelvis* or its ramifications; but there are little grounds for such an apprehension, if it be considered that, by continual and copious potation, such a full tide of urine is procured as may wash away any thing that may begin to adhere. Others again have thought that the body might be too much enervated and weakened by so slender a regimen and such large draughts of liquor — but this inconvenience is trifling when compared with the mischiefs occasioned by a stone. Nay, BOERHAAVE considered this subsequent languor as a favourable omen. *Semicupia*, in which

the patient sits up to his loins, are very useful; after bathing the parts about the kidneys and ureters should be well anointed with soft and emollient liniments; the most emollient decoctions should be thrown up by way of clysters, that the *colon*, being filled with such a warm fomentation, may comfort the kidneys near which it lies; oils also mixed with smooth and soft broths are properly administered in the like way, to render the parts as lubricating and slippery as may be — these applications at the same time take off the spasmodic contractions, which may be caused by the stone irritating the ureters.

I have known an opiate given after these warm and emollient applications with good success, the stone having, by its happy effect, descended from the kidney into the bladder while the patients were asleep, who, upon waking, have been almost intirely free from pain,

pain, and have soon after voided the stone. But, since different people require different doses of opiates, it will always be safest to dilute the dose in water, and to give it by a spoonful at a time, till the effect we hope for is produced.

Acrid diuretics must be rather hurtful, as they stimulate and inflame the affected parts, and so render the urine acrimonious. Great care should therefore be taken not to be too busy with this sort of medicines, since even the mild diuretics may be injurious. SYDENHAM says, if the stone confined in the kidneys be too large to pass through the ducts of the ureters into the bladder, mineral waters should not be drank, because they may bring on a fit of the stone, which will last, with imminent danger, till the stone return into the *pelvis*.

He never therefore joined manna with mineral purges, although, when given in this way, it operates sooner, and occasions less nausea; but, when he was convinced that the stones in the kidneys were small, he judged nothing more efficacious, both to prevent the increase of the stones, as well as to promote their expulsion.

LOBB condemned all powerfully stimulating remedies in the stone, especially when it was attended with a fever and exquisite pain —. AETIUS, after commending the use of baths, fomentations, clysters, oily medicines, cataplasms, &c. says, that these alone are often found sufficient to remove the stone; but, when these fail, he advises diuretics, and even some which are pretty pungent, such as *calamus aromaticus*, the seeds of *bishop's-weed*, *daucus*, *oreoselinum* or *mountain dauke*, &c. — he adds, however, the following caution:

tion: "These medicines which promote urine and break the stone should be administered when the pains are over or much relieved, which happens when the stone is removed to its former situation; but, should the stones remain fixed, plentiful potions, as well as diuretics, should be avoided. The members should be relaxed by fomentations, cataplasms, incisions, and the belly kept soluble by infusions and bathing but; lest ureters, transmitting the urine from the kidneys to the bladder, might be compressed."

After the use of emollients, lubricating and oily medicines, baths, &c.

ARETÆUS recommends *αιωραι τοις δε, και σειςιες, &c.* — Motion and violent exercises, in order to facilitate the expulsion of the stone, although this may be attended with some pain, *καρτα γαρ επιπονος των λιθων η ες την κυστιν οδοιποριη* —.

But

But these should be chiefly used when the pains remit a little; thus we follow the directions of nature; for we observe the patient frequently changes his posture, in order to procure relief; besides, we see that a vomiting always attends a nephritic fit, which, forcibly shaking the abdominal viscera, promotes the descent of the stone through the ureters; this vomiting is allowed to be a salutary effort of nature, and should for that reason be assisted by plentiful draughts of warm emollient liquids.

It is prudent, however, to begin with gentle and moderate exercise, and to increase it gradually, lest a rough stone might hurt the kidneys or ureters by too violent concussions, which would bring on bloody urine, inflammation, and various other evils.

As the bad consequences arising from a stone in the kidneys are much to be feared,

feared, because of an inflammation, physicians have ever very carefully endeavoured with all their skill to prevent or remove it.

Bleeding has therefore been greatly recommended, especially when there was a fever, attended with considerable pain; PRISO rather chose to begin with evacuations by vomit and clysters — it appears, however to be much safer to bleed first, because a violent vomiting generally accompanies the descent of the stone; hence there may be danger of bursting the full vessels, or that those of the head may be too much distended from such strong efforts.

Besides, by bleeding, as ARETÆUS observes, we facilitate the passage of the stone through the ureters:

ἢν εὐσάπτες λήθων ἐσθί, ἐν τε φλεγμασιν, ταμνεῖν φλεβὰς
&c.

AETIUS

AETIUS too advises repeated bleeding; but adds, that a less quantity of blood should be taken away than the *plethora* seems to require, because he could scarcely expect an immediate descent of the stone, especially if it were large: but ARETÆUS's method of taking away a large quantity of blood at first appears to be safer; for, should the disease require a repetition of bleeding, it may be moderated in proportion to the strength or age of the patient.

FREIND observes that *nephrotomy* was practised by the *Arabians*, but that SERAPION and AVICENNA disapproved it as a most dangerous operation, and that none but madmen or quacks would dare to perform it: he however tells us of two who lived many years after they had submitted to the operation; Consul HOBSON, performed by MARCHETTI, at *Padua*; and

and a *malefactor* at *Paris*, in the reign of Charles the VIIIth.

Insurmountable difficulties attend this operation; for the situation of the kidneys varies greatly. And how can the most able surgeon direct the point of his knife in so deep a wound so as to divide the substance of the kidneys to the very *pelvis*? What infinite hazard does he run from a very dangerous and even fatal hæmorrhage? Besides, neither the situation, figure, nor size of the *calculus* to be extracted, can be ascertained — hence it may so happen that the stone cannot even be extracted at last; for how is the surgeon to introduce his forceps through so deep a wound to take hold of the stone? Or how, even should he succeed in introducing it, will he be able to open the flanks to effect it? How can he be certain that no part of the substance of the kidneys

nies or *pelvis* will stick between the *forceps* and the *calculus*?

TULPIUS, on finding a large stone in each kidney of a person who died of a disorder in his breast and of those parts, spreading itself into four branches cross-ways, exclaimed, What infamy must have attended those who boldly espouse *nephrotomy*, should they have met with a stone adhering so firmly, and branching, as this did, in the kidneys?

The stone is so terrible a disease, that it can admit no cause of surprize that so many attempts should have been made to find out a solvent.

ARETÆUS despaired of such a discovery; ἡ λίθος μέγας μὲν, ἀναλθης δὲ οὐτα γὰρ θρυπτεται ἢ ποσι, &c. a large stone, says he, is not to be moved by medicines or potations —.

The human *calculus* is not a simple homogeneous body, whose parts are
all

all fimilar to each other, and to the whole of which it was compofed — but, upon a chymical analyfis, produces the fame fubftances as are obtained by fire from the other parts of animal bodies; a volatile falt, water, oil; leaving a *caput mortuum* black and friable; which, upon expelling or destroying the pitchy oils, leaves an earth which will not cohere —.

Hence it was conjectured that, if one or more of the constituent parts of the ftone could be feparated from the reft, the cohesion would be destroyed, and fo the ftone, which before was hard, be rendered friable and eafily broken; but, fince the fire expels the volatile falt from the ftone with great eafe, its feparation was not un-reafonably expected; and, fince quick lime, with the addition of *fal ammoniac*, immediately expels the volatile alkaline fpirits into the air, and produces

duces the same effect when mixed with urine — it necessarily gave a hint that quick lime might be a good remedy in this disease.

Dr. HALES was surprised to find that one half of the stone was air, such a quantity of which he never observed extracted from any other body, animal, vegetable, or mineral. But it was much more wonderful that the non-elastic air in the stone, when rendered elastic by the fire, should be found as 1 to 645 —!

“ I put, says the same very accurate
“ and ingenious writer, into a *Florence*
“ flask full of cold water, a small, round,
“ reddish gravel-stone, about one eighth
“ of an inch in diameter, and also a
“ piece of a very hard *calculus*; and,
“ having suspended the flask over a fire,
“ when the water boiled, air arose in
“ plenty from the gravel, whereby it
“ was raised up in the water, and
“ much

“ much agitated to and fro; so that
“ it looked like the *nucleus* of a
“ comet, with its long train of air-
“ bubbles arising from it.

“ When it had boiled for an hour
“ and half, on pouring in a little
“ more hot water, it ceased to boil
“ for a minute, and, during that time,
“ no air arose from either of the
“ *culculi*.

“ An hour and a half after that
“ I poured into the flask some more
“ water, which was much cooler
“ than what was poured in before;
“ as soon as the other water boiled,
“ I expected air would arise again
“ from the gravel; but none rose till
“ it boiled a considerable time: then
“ I took out the gravel, and found it
“ wasted two thirds; but the very
“ hard *calculus* was not sensibly wast-
“ ed, notwithstanding some air arose
“ from that also in boiling.”

If therefore the air could be expelled from the *calculus*, it is certain that its bulk would be greatly lessened, and in all probability the cohesion of the other parts be destroyed, and the stone rendered friable. It appears, however, from the experiments above recited, as well as by some others made by LOBB, that all stones are not equally to be deprived of their fixed air.

That this fixed air greatly contributes to cohesion, at least in vegetables and animals, MACBRIDE has proved by various excellent experiments.

Calcareous earths have a great affinity to fixed air, and abound in it: upon powerful calcination, they are deprived of it, acquire a caustic quality, and become soluble in water: as soon as this fixed air is again restored, they lose their causticity, and are irresolvable in water.

Fire

Fire and acrid corrosives are known to expel air from the *calculus*; but, as these cannot be applied whilst the stone remains in the human body, it will be worth our attention to discover (if possible) some remedy which may effect this, without endangering the ambient parts. *Quick lime* seems to possess these properties, and for this reason it is that we see it an ingredient in so many lithontriptics. Dr. MEAD severely inveighed against the celebrated medicine prepared by *Ann Stephens*, and blamed some physicians who recommended it to parliamentary consideration, by which she obtained so great a reward for so inconsiderable a remedy—. He very candidly, nevertheless, owns that great service might be expected from lime-water, prepared without soap, from calcined oyster-shells, &c. — which he thought to differ very much from quick lime.

But it may be very much doubted whether the use of this medicine in persons unafflicted with any other disorder, the stone excepted, is so very dangerous? For it appears that many people have taken Mrs. *Stephens's* remedies without receiving the least material injury to their constitutions: they are nauseous, and it is not every stomach that can long retain them; but there have been many who, in hopes of getting ease from their most excruciating pains, have got so far the better of their loathing as to retain them. The urine of these people was found to be acrid and alkaline, and to ferment with acids — but it does not follow that the blood and its *serum* must be similarly affected. For *these* are observed to contain a far less quantity of salts and acrid humors than *that*. And since the sharper salts would naturally be injurious, were they to continue for a time in the body,

body, and pass off with the urine; this becomes more acrid than usual, washes the stones in the kidneys and ureters which have lain in the *lixivium*, and, being collected in the bladder, operates more powerfully and much longer on the *calculus* there, so as to soften the outward *lamellæ*, separate, and discharge them with it; hence the size of the stone will be gradually lessened, and at last be intirely driven out of the body. MORAND asserts that many have taken these medicines for a considerable time without any injury, some with manifest benefit, and others again with such success as to imagine themselves perfectly cured. From his own observations, however, it does not appear that these remedies effected a perfect solution of the stone, but only that some voided fragments of the stone — And the stones which were affected by this *lixivium*

were only of the softer kind, in old persons chiefly; not so much in adults, and least of all in children.

We may conclude upon the whole, that these remedies may be safely taken; that the bladder is no ways injured by the additional acrimony of the urine, and that, after a long use of them, lithotomy may be performed with greater ease and safety.

This put Dr. WHYTT upon considering whether, as the efficacy of these remedies depended chiefly upon the quick lime, a lime-water might not be substituted in the room of these nauseous compositions.

He very judiciously observes that specious reasoning alone is not sufficient to determine the effects of medicines, and confirms it by experiment.

I persuaded a captain far advanced in years to drink lime-water mixed
with

with milk, but without soap, by which he was much relieved from the pain he had felt from a stone in his bladder: it is certain it will give great ease, particularly when there is no occasion for the operation. I met with some patients who loathed milk; these only drank the lime-water, and with very great success; that is, with a very considerable relief to their disorder, particularly such as had all the symptoms of a stone in the kidney. — Perhaps this remedy may more efficaciously lessen the size of the stone simply drank than when mixed with milk. MACBRIDE judged of the efficacy of lime-water from the force wherewith a lime-stone lying in the lime-water attracts the fixed air, which constitutes so great a part of a stone; for he found that, if to a large quantity of lime-water a third part of milk was added, much of its efficacy was

destroyed; because the milk, with the fixed air contained in it, saturates and precipitates the lime, and renders it unactive, and therefore unfit to destroy the cohesion of the *calculus*. He farther adds, that Dr. ALSTON remarks that every thing that was usually joined with lime-water, more or less weakened it; and therefore he commended it to be drank unmixed. He imagines that this is the reason why lime-water does not effectually dissolve the stone; for it meets with the vapours of fermenting aliments in the *primæ viæ*, which precipitates the lime: nay, should the lime-water even pass with all its virtues into the bladder, it would there meet and mix with the urine which contains fixed air, with which it would be saturated, and so lose its lithontriptic power; he therefore thought that the quantity of earthly particles which usually

usually reside in the urine of those who drink lime-water is precipitated in a great measure by this lime-water. His chief dependence on the efficacy of lithontriptics was, that the urine saturated with them might act upon the stone in the bladder; those therefore who take these medicines should be advised to retain their urine as long as they can, without doing themselves any mischief.

But since all lithontriptics, taken in at the mouth, were justly suspected to lose much of their efficacy before they passed into the bladder, in their passage through the *primæ viæ* as well as in the course of circulation with our humors, physicians contrived injecting these medicines immediately into the bladder itself.

WHYTT commends five or six ounces of lime-water prepared, from oyster-shells, to be injected and retained

tained as long as it can be without pain, whilst the patient drinks it at the same time. This injection should be used immediately after the urine has been thoroughly discharged, and be as often repeated in the day as it could be conveniently complied with, care being had not to injure the parts by the frequent introduction of the catheter. A flexible catheter should therefore be left in the bladder and this inconvenience be avoided; thus may the injection be repeated *ad libitum*.

But the bladder will not bear lime-water, although it be mixed with milk. Dr. HAEN observed this in a person who very resolutely took lithontriptics inwardly, but could bear no injections prepared with it and milk, and yet they were administered with the greatest caution.

WHYTT

WHYTT for this reason very properly observes, that we should never have recourse to injections till the patient has drank lime-water for many weeks with apparent success — for then the internal surface of the bladder, which before was too sensible, will, much more readily and with greater ease, bear the injections, retain them longer, and of consequence render them more effectual.

But since the stomach and bowels can very easily suffer lime-water, nay, since it may be very innocently dropped into the eye; and since surgeons bathe and wash inveterate ulcers with it, without giving any additional pain; it must appear that lime-water has not such an acrimony as to hurt the bladder. But, should the internal surface of the bladder be so tender as to be too much irritated by the lime-water, an injection might then be contrived,

contrived, made up with half a pint of lime-water just boiling with a drachm of starch, or the fourth part of the yolk of an egg; this it will easily bear: it appears from trial that this mixture will not deprive the lime-water of its lithontriptic quality.

Dr. HALEs tried many experiments to attempt the solution of the stone, particularly by putting human *calculi* into a mixture of acid and alkaline salts during their effervescence: he hoped by the sudden conflict to separate the fixed air from the stone, and to render it elastic — but he found, upon several trials, that some stones received many air-bubbles and became friable; but the experiment did not succeed so well upon the harder *calculi*.

HALES however confesses that these experiments could by no means encourage him to recommend the practice

tice in the human body; because the effervescing liquors must be too frequently applied to the stone, before they can produce any remarkable effect: besides, the acid and alkaline liquors must be separately conveyed into the bladder, in order to promote an effervescence—and these liquors are by much too pungent to be admitted into that viscus—.

Hence we may conclude that we may use lime-water, either unmixed or with the *Venetian* soap. And it must be owned, that it has done great service to many, by much relieving the pain and making it very tolerable, and sometimes by so destroying the stone as to make the patient think himself cured, though the stone still remained in the bladder. From many late observations it appears that lime-water possesses a lithontriptic virtue, especially when the stone is not hard.

The

The effect will be best produced by injection; for then it lies every day, for several hours, with the stone, preserving its full virtue by the warmth of the human body; by this means we have great reason to expect the stone will grow less, or be rendered so friable, as to pass off gradually with the urine. Besides, it is very probable that the use of lime-water may prevent the future concretion of fresh calculous particles; this has been proved by several excellent experiments made by the ingenious Dr. WHYTT.

There may possibly be other remedies which may ease the pain, though not absolutely dissolve the stone. LINNÆUS amongst other things mentions the *uva ursina*, *Spanish whortles*; which was in high esteem some few years ago with the physicians at *Montpelier*. They gave half a drachm of its leaves
for

for ten days successively, and to wash it down with chicken-broth; these have an astringent quality, and are much in use with the tanners all over Sweden —.

The leaves of this plant, given in powder, in large and repeated doses, succeeded so well that the patients thought themselves perfectly well, though, upon introducing the catheter, the stone might easily be felt in the bladder. Dr. HAEN was frequently a witness of this, When the pains were extremely violent, opiates were prescribed, together with the *uva ursina*; nor must the success be attributed to them only, since they were afterwards unnecessary, though the stone still remained — the urine, which had a most fetid smell, and was so alcalious, that, as soon as it was made, it effervesced with acids, and turned the syrup of violets green, became

became much better, and was like that of those in health; the purulent matter and ponderous *mucus*, which are so frequently discharged with the urine of those who are much troubled with the stone, went off, though the stone remained in *statu quo* — nor was this relief of short duration, but continued for many months. I have tried this medicine with great success in ulcerations of the urinary passages, when no symptoms of the stone appeared; I gave it, for a considerable time together, in a decoction of mallow and liquorice-root, drank in great plenty, in order to destroy and obtund the acrimony of the urine which was perpetually washing the ulcerated parts.

HELMONT commends the juice of the birch-tree — he preferred that which issued from the branches to what flowed from the body of the tree;

tree; he declares that he found them of infinite use as a preservative against the stone, and even of singular advantage in giving ease —. The great BOYLE mentions the virtues of this remedy with much commendation; however it does by no means appear to possess any lithontriptic virtues.

We know but of one *menstruum* which can dissolve a stone; the *spirit* of *nitre*; but this is so acrid that it would destroy the bladder much sooner than the stone if it were injected — and to take it inwardly it would necessarily require so much dilution to make it tolerable to the stomach and bowels as to lose its intended efficacy; and, in passing from the stomach and bowels into the bladder, it would be so intermixed with the different humors of the body as to become totally inert — this therefore can never be considered as a lithontriptic. The same objections

may be made to the *lixivium capitale*, which is a fiery acrid composition, as well as to many other boasted lithontriptics — it cannot, however, be denied but that alkaline salts, rendered more pungent with lime, retain a strong lithontriptic quality, although they be diluted with a large quantity of water.

HARTLEY, by several experiments he made, found that pure water has a solving power : “ If a stream of water “ could be made to pass through the “ kidneys and bladder for any considerable time, it would dissolve all “ the stones contained in those parts.”

LOBB endeavoured to give the urine such a medicinal virtue as to be a dissolvent. But, as a stone contains such a large quantity of fixed air, he wished not for a sudden solution of the stone, though it could be obtained, for fear that the elastic air by its explosion, worse consequences might ensue. He therefore

therefore chose to effect it more gradually and more agreeable to the body by a well regulated regimen. He endeavoured to find out, for this purpose, if there were not such things amongst the eatables and drinkables as had a lithontriptic quality when applied to the stone, when out of the human body: that, if such could be had, they should most undoubtedly be preferred to all others; and of course such be avoided as tended either to increase or harden the stone; amongst the former he reckons “ lemon-juice, “ turnips, and their juice, a strong “ decoction of mulberries and strawberries, vinegar, the juice of elder- “ berries, pears, grapes, honey diluted “ with water, asparagus, parsley, milk, “ chocolate, smallage, cucumbers, a “ decoction of leeks and onions, figs “ and raisins, common and wood sorrel, “ barley-water, oats and rice decoction,

“ tion, orange-juice, hops, tea, and
“ more especially raisin and elder wine
“ and cyder.”

But all these things are so slow in their operations, that not only days, but many months are, required to dissolve or to render the stone so friable as to be easily broken: they must therefore be taken for a long time, and that plentifully too, in order to give the urine such a medicinal power so as to produce any material effect. HALES, in his experiments on the *calculus*, observes, “ that the surface of that which
“ he put into the pulp of onions was
“ so soft (after having remained in it
“ thirteen days) that he could scrape
“ it off with his nail; it was the same
“ when he put a like hard stone
“ into onion-juice mixed with water,
“ which was kept warm in a chimney-
“ corner for fifteen days, in which
“ the reddish gritty gravel of two other
“ persons

“ persons was at the same time dissolved; hence onion-juice seems to have some considerable efficacy in dissolving the *calculus*; and where frequently eaten should, if not waste, at least prevent the increase of the *calculus*. Dr. LOBB found leeks more effectual dissolvents than onions.”

One reason why the effects of these remedies must be more gradual is, that they must mix with the urine. HALES remarks that a fortieth part of urine only, added to the water in which he was dissolving a stone, greatly retarded the effect.

In case a stone adheres to the narrow part of the *pelvis*, clysters will be of infinite utility; because by these the indurated faeces which distend the *colon*, so contiguously lying near the kidneys, will be discharged, and that intestine be prevented from swelling and pressing upon the *pelvis* and the beginning of

the *ureters*. If after the evacuation of these faeces the *colon* be filled with a warm, emollient, and oily liquor, it will afford a warm and comfortable *fokus* to all the ambient parts; for the same reason fomentations and cataplasms, applied externally to the loins, will also be found very serviceable.

Bleeding is necessary, more especially to take off the violent tension and so prevent the inflammation which is here to be apprehended, or to take it off if it be already begun.

When once the stone has passed the *ureters* and is lodged in the bladder, there is a cessation from pain — this is a certain and almost *pathognomonic* sign.

It is observable that, when the urine has been long retained, it rushes out with greater force and in a larger stream; hence it is evident that the mouth of the bladder is much and suddenly

denly dilated, and that the calculus has a wider passage for its discharge. For it must be remembered that the stone almost ever comes away with the first gush of water. I ordered a patient of mine to drink a large quantity of the decoction of mallow and liquorice-root, so that by its mild and emollient softness it might be long retained with the urine: I moreover injected some oil into the *urethra*; I then persuaded him to run about the chamber, and, when he could no longer keep his water, to discharge it into a large pot with as much force as he could; upon the first stream I was very happy to hear the stone clink at the bottom of the pot; it was about the size of a cherry-stone, though rather of a more oblong figure.

It may be worth inquiry whether a particular situation of the body may not favour the expulsion of a stone? DE LA HIRE relates a case, where a

man, violently afflicted with a nephritic pain, was sitting on the ground, with his body bent forward by way of ease, as he was writing; and in this posture he voided a stone as large as an olive — encouraged by such an event, another person, under the like predicament, tried the same experiment, and with equal success. MERY observes that in this posture the sides of the bladder very much approach each other; hence the bladder is so contracted that it propels the urine with the greater force, and so carries the stone along with it, whose size was equal to the cavity of the urethra when but little dilated.

Dr. HALES, intent upon his experiments upon the stone, considered that, as large gravel-stones which often stick for several days in the *urethra*, to the great torment of the patients, and which they cannot sometimes be delivered from without

out cutting them out, an instrument might be contrived; and which was found by Mr. RANBY, to whom it was sent, upon repeated trials, to extract these stones with great ease and readiness. — See the description of the forceps, &c. in HALE'S Statical Essays, vol. ii. p. 249 —.

In case of a total suppression of urine, when the stone is immoveably sticking in the *urethra*, and cannot be thrust back into the bladder, or removed by cutting, all which may particularly happen in consequence of a rough or sharp-pointed stone, of unskilful management of the catheter, or of any other similar accident, a violent inflammation of the *urethra* ensues, and the tumor will not subside, though the best remedies may have been administered. Under these circumstances, unless a free passage be obtained for the urine, intolerable pains, and delirium,

delirium, and then convulsions and death, will follow. — Nothing now is to be done but to make a puncture in the *perineo*, the very place where the lateral operation is performed.

The various methods used in the operation for the cutting for the stone is so universally known to all the gentlemen in the profession of surgery, that the *Abridger* purposely omitted what VAN SWIETEN says upon the subject: he hopes his candid readers will pardon the omission, as his only view in committing it was to avoid prolixity.

of

Of the VENEREAL DISEASE.

IT has long been a matter of controversy among the medical writers whether the *venereal disease* was known to, and described by the ancients, or whether it be a new disease?

The ancient physicians have mentioned some particular symptoms which appear to have an affinity to those we find in this disorder: but that complication of symptoms which attend the *lues venerea* never has been, nor ever will be, traced in any ancient writing whatever.

Since this disease made its appearance about the time COLUMBUS returned from his new discovered *American* voyages, it is no wonder that it should
be

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be universally believed to be a native of that country — and, indeed, when we reflect that some who returned from thence with COLUMBUS were afflicted with the *pox*, till then an unknown malady; we shall have reason readily to conclude that it was really brought from thence into *Europe*.

Some called it the *Neapolitan*, some the *Spanish*, others the *French Pox*, till FERNELIUS, to remove every national prejudice, luckily hit upon a name which would be acceptable to all, by calling it — the *Lues Venerea*. This terrible and noisome disease appeared first in *Spain* about the year 1493, and in *France* and *Italy* in 1495.

It was thought to be an *epidemic disease*; but this by no means appears to be the truth, since it has never, in our times, been known to arise from such causes as produce an epidemic disease — besides, it is obvious that epi-
demic

demical diseases never last for many years, but when other epidemic constitutions arise, decrease, and at length disappear intirely. — The *Venereal Lues* has reigned upwards of two hundred and seventy years, and still continues to spread its infection —.

Although the *Venereal Disease* has been called the *scourge* of *fornicators*, yet the chaste may be infected by it, by communications of various kinds —.

It is not at all a matter of surprize that the children of infected parents should be attacked by the disease. For as the venereal poison, conveyed into and mixing with the circulating humors, must pass through the whole body before it fixes upon any particular part of it; the *fœtus* in *utero* must receive the infected humors continually, and so catch the *fomes* of the disease before its entrance into the world.

That

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
That an infant may be infected in the womb of its mother is very probable. ASTRUC says, " Thus from
 " an infected mother have been observed to come squalid, semi-putrid,
 " ulcerous, and downright venereal births. But it is a more abstruse
 " question, and deservedly doubted, whether, from either of the parents
 " being infected, the *Venereal Disease* can be infused into the *embryo* in
 " such a manner as to be concealed without doing any mischief during
 " the time of childhood, and break out of its own accord after the person is grown up, and, without any
 " new infection, produce the true *Venereal Disease*." This scarcely seems credible, since the *venereal virus*, communicated by sucking or any other way to children, must quickly waste the parts on which it seizes. ASTRUC for this reason observes, " I never saw
 " the

“ the *Venereal Disease*, strictly so called
“ and distinguished by the pathogno-
“ monic symptoms of the distemper,
“ communicated from parents to their
“ children; which has made me ima-
“ gine that physicians have been some-
“ what too credulous in this affair,
“ consulting chiefly the reputation of
“ their patient by assigning, if not
“ the real, at least a probable cause
“ of their indisposition.”

It may be noted, however, that a *fœtus* uninfected in *utero* may still be born with the *Lues Venerea*; as when in its birth it sticks long in its passage, and may be infected by the *venereal ulcers* there, with which the very midwives have been frequently known to have been contaminated. But the *virus* received in this case will take immediate effect, and by no means continue latent till the time of puberty: there is no danger of this happening
when

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when the birth is quick, because the child, as soon as it is discharged from its confinement, is well washed and rubbed, and cleansed of all the *sordes*; the midwife may nevertheless be infected, because she is still farther and and larger engaged in her business. It may be easily conveyed by sucking. Thus we are told by Dr. BARRY, of a woman, whose employment was to draw women's breasts in their lying-in, who had a venereal ulcer in her mouth, by which she infected several ladies; the Doctor visited several of them, and was astonished at the rapid progress of the disorder, which he describes in the following manner:— The nipples were at first but little inflamed; then followed an excoriation and an oozing of a thin liquor; red pimples broke out about the excoriated parts, which gradually spread all over the breast, and which would have become
ulcerous



ulcerous, had they not been taken proper and timely care of — The pudenda soon after became infected with a violent itching, attended with chancres, which discharged, the whole body became full of pustules. They most of them got well in about three months. — The husbands were all infected by their wives, had chancres and ulcerations in their mouths, together with red eruptions all over their bodies —.

I saw a little boy who died in three weeks of a *Venereal Disease*, which he received from his nurse, who had intirely lost the *velum palati* by it —.

If the infection may be thus communicated by sucking, how much more likely is it to be received when two persons in kissing lasciviously protrude their tongues into each other's mouth — for it has been thought that the *virus* very easily communicates

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with the *saliva*, since it is observed that the disease is cured by salivation.

Lying in the same bed with an infected person who freely perspires, by wearing the same clothes, drinking out of the same cup, wiping the mouth with the same napkin, &c. have been considered as sufficient means to give the infection, and of which we meet with a variety of instances in different authors. — Yet it is possible these were all fictions invented by the diseased to conceal their own naughtiness — ASTRUC, however, says, that he would not obstinately deny the disease might possibly be communicated this way; yet that he should be more unwilling to admit of this method of contagion, as it has not hitherto been confirmed by unexceptionable experience.

The most frequent and undoubted way of giving the infection is by the *semen*.

From

From a case related by Dr. DANIEL TURNER, and from others of the same kind, and in some of which indeed I have myself been concerned, I am inclined to differ from ASTRUC, who positively asserts that the poison is never admitted, unless the part which admits it be first infected —.

A horse-guard trooper [SIPHILIS Hist. 16. p. 297.] who had not lived very strictly, quitted the service and married. — Several years after he often complained of a sore throat, and not only of his *tonsils*, which were inflamed and one of them much ulcerated, but of a sore in the roof of his mouth or *os palati*; when he smoked, some part of the fumes came out at his nostrils, and so did his liquors, if he drank hastily; upon my declaring that I suspected his case to be venereal, he could scarcely believe it, as he assured me that he had been married upwards

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of ten years to a very modest women by whom he had children; that she nor they ever had the least shadow of the complaint in all that time, wherein he was sure he had never gone astray; and farther, which was still more strange, that he had formerly lain with many women, yet had never had a *clap*, at times only a little fretting upon the neck of the *glans*, which healed of itself, or with a little pomatum, or melted tallow by a candle, and for which he had never taken one grain of physic, &c. —.

I agree however with the learned ASTRUC in what he afterwards advances: “ When local disorders have
 “ shewn themselves before-hand, we
 “ may judge of the *Venereal Disease*
 “ from slight symptoms; but, if none
 “ such have appeared, we should be on
 “ the negative side of the question, or,
 “ which amounts to the same thing,
 “ be

“ be cautious in our decision till more
“ urgent certain and diagnostic signs set
“ the matter in a clearer light. The
“ safest way, therefore, is to make a
“ farther inquiry into the truth of the
“ fact. For no mischief has ever
“ arisen, but often an advantage, from
“ being scrupulous in matters which
“ might seem to be very evident.”

It appears, therefore, that the venereal *virus*, being not yet intermixed with the sound humors, or, if it had, is freed from that connection, becomes so thin and imperceptible as to pass through the whole body in the course of circulation.

This *fomes* in the blood may occasion such disorders as would ensue from an external contagion. The *virus* is increased by heat and exercise, and, if it should afterwards be deposited upon any particular part, it would have the same effect it would have

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had, had it been externally applied. Thus a person may have the infection in his body although, it appear not on the surface, and yet this infection afterwards mixing with the humors may, by assimilating them to its own nature, settle on some particular parts of the body, and produce the most mischievous effects. It sometimes happens that the *virus*, from a venereal ulcer of the *glans*, though not very large, perhaps re-absorbed, flies to some remote parts, which it may inflame and ulcerate. And, since this is the case, may not the infection be absorbed and mix with the humors by an imprudent contact in the arms of an infected woman?

Many were of opinion that the *Lues Venerea* sprung from the *elephantiasis*, in consequence of a leprous person's lying with a woman who was much frequented, and had in a few days given the distemper to more than forty different

rent persons, who still propagated the disease farther. But PLATERIUS, as ASTRUC observes, asserted that the *elephantiasis* was a distemper totally differing from the *Lues Venerea*; and the former had, for upwards of forty-three years, attended leprous patients, and was consequently perfectly acquainted with the nature of that disease.

Since the *Lues Venerea* is most generally received by coition, some imagine it might arise from inordinate lust: but this certainly cannot be the case, at least with regard to its origin in *Europe*; for, had it been so, the disease would most probably have been known much sooner — how abandoned the ancients were in their morals evidently appears in history; and yet we can trace no resemblance of the disorder amongst them; nor yet have the Poets made any mention of it, who so severely

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marked the vices and depraved manners of their times. — Would not *Juvenal*, *Horace*, *Martial*, &c. have painted in the most lively colours the rotten and mutilated victims at the shrine of *Venus*? Is it not therefore reasonable to conclude that the complication of causes, which might produce the *Venereal Disease* without any preceding contagion, had not hitherto been remarked in *Europe*?

That the *Lues Venerea* should have originally appeared in hotter climates seems not at all to be unlikely — where the menses of the women are extremely sharp and corrosive, and who at the same time indiscriminately give themselves up to prostitution, and where the men indulge their most immoderately lascivious appetites. *ASTRUC* proposes this as at least a probable conjecture; “it must be very unsafe to
“ go near the women whilst the menses
“ are

“ are upon them ; it is certain that
“ even here in our milder regions of
“ *Europe*, if any one has do with a
“ menstruous woman, the *glans* and
“ prepuce shall, for the most part, be
“ affected with a slight inflammation
“ or superficial pustules — how much
“ more violent consequences, therefore,
“ in a hot and burning climate, must
“ attend such as are not ashamed to
“ have to do with women under the
“ circumstance of so sharp, and, in a
“ manner, so venomous a discharge ?”

It has been observed by others as well as by myself that the *venereal miasma* received into the blood, and then deposited upon the skin, has sometimes produced spots, which were not prominent, of a copper colour, which became scaly, and, when several of them scaled off, turned into a venereal ulcer, which discharged a copious

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pious, foul, and yellow matter, daily verging towards a green —.

Hence it will appear what danger may be apprehended when the venereal *virus* does not affect the blood about the parts it first attacked — for, although the matter of the disease may be again separated from the blood, and be deposited on some other part, yet will this indicate an increase of the distemper; nor will it be in the power of art to direct such a *metastasis* to such others as may be attended with least mischief, and the most easily be cured; and there are many unhappy instances of the internal as well as external parts of the body being infected.

ASTRUC has very well observed that the venereal poison brings on a redness, heat, tension, pain, in short, an inflammation upon the parts which it affects — this inflammation, however, is slow in its progress; for a suppuration
tion

tion does not so suddenly come on as it does in other inflammatory diseases, or any other event which is consequent upon inflammation; but it is all at once attended with an acrimony destructive to all and every part it seizes upon, not the bones excepted.

Although the physician have just reason to suspect the *Venereal Disease*, he should still be sufficiently prudent to suspend giving his judgment, unless the patient fairly and honestly confess he has been dabbling — for many will obstinately deny it, and *d—n the Doctor and his suspicions* — besides, we should be cautious to preserve the reputation of our patients, as well as how we disturb the peace and quiet of families.

BOERHAAVE says, “ The venereal
“ poison is first lodged in that pin-
“ guous humor of the human body,
“ which in sound persons fills what
“ the

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“ the ancients called the panniculus
 “ adiposus, and the moderns membrana
 “ cellulosa; so that the contagion, en-
 “ tering the pores of the epidermis,
 “ passes through the skin to the cellulæ
 “ of the membrana adiposa, where,
 “ mixing itself with the pinguious li-
 “ quor lodged there, it is, by the con-
 “ tinual heat, motion, and continu-
 “ ance, more and more heightened in
 “ its quality, corrodes and corrupts the
 “ superincumbent skin and cuticula,
 “ whilst in the mean time it contami-
 “ nates the adjacent oleous cellulæ all
 “ around. Hence the disorder is farther
 “ spread in the panniculus adiposus
 “ than in the superincumbent skin,
 “ which is destroyed and corroded.”
 This membrane is called adiposa in
 those parts of the body which are
 covered with thick and large muscles;
 but, where it is thin, it is simply called
 cellulosa, and, instead of a thick fat,
 contains

contains an oily mucous humor in its cellules which is equally capable of receiving and entangling the infectious poison. ASTRUC endeavours to controvert this opinion, and thinks it repugnant to the known mark and nature of the venereal poison as well as to the nature of its attack and progress. He grounds his opinions on arguments which it will not be amiss briefly to consider —.

First, then, he affirms that gonorrhœas, buboes, porri, and verrucæ are the first symptoms of the disease; none of which have their seat in the membrana adiposa. But, with submission to the authority of so excellent a writer, I must beg leave to say he has not so diligently attended to the distinction BOERHAAVE makes between the adipose and cellular covering — “ where-
“ ever (these are the words of the
“ last named professor) the muscles
“ are

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“ are the largest, and have the most mo-
 “ tion, there always this membrane
 “ (the cellular) is naturally thickest,
 “ and stored with the richest oil, as is
 “ sufficiently observable in the breast,
 “ abdomen, back, loins, hips, thighs,
 “ legs, shoulders, arms, temples, and
 “ neck. Whereas on the contrary, in
 “ those parts where the muscles are
 “ small, and have little action, this
 “ *pannicle* contains so very little fat
 “ that scarce any body allows it to be
 “ then an adipose membrane, and
 “ RUYSCH himself reckons it only a
 “ cellular one. Thus many affirm
 “ that it is wanting in the head, eye-
 “ lids, face, and scrotum: but this is
 “ a common mistake; for it is, indeed,
 “ bestowed upon those parts, but then
 “ it is there thinner than upon the
 “ *nates*, in the same proportion that
 “ the elevator muscle of the upper
 “ eyelid, or the *corrugator frontis*, is
 “ smaller

“smaller than the *glutæi*.” It is well known that the mucous *cryptæ* of the *urethra* throw out a mucous humor that defends the passage of the *urethra* from the acrimony of the urine, and which is readily prepared to entangle the venereal taint — hence it evidently appears that the *gonorrhæa* instead of disarming rather corroborates BOERHAAVE’s opinion.

For this reason it is that we so frequently meet with foul ulcers in the tonsils, *uvula*, in the palate, nostrils, and in their sinuses, because all those parts are constantly moistened with a great quantity of mucus tolerably viscid; this is likewise true with respect to buboes — for, though the re-absorbed *virus* may pass through the lymphatic veins to the inguinal glands, yet even those are placed in a cellular or adipose covering. Besides, we are taught by anatomy that the glands are made up
of

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of arteries, veins, and nerves, and are of a substance peculiar to themselves, so as to regulate and arrange their various complications, connections, and directions, and are all of them involved in one coat or covering — the inguinal glands must therefore, in their own substance, have a cellular tunic.

BOERHAAVE perfectly well explains what we are to think of *porri* and *verruca* — for, after he has observed “ that
 “ the *glans* consists of the *corpus spongiorum urethrae* produced as far as to the
 “ orifice of this canal, and thence reflected over the extremities of the
 “ two *corpora spongiosa penis* to where it
 “ terminates, forming a rising *limbus*
 “ called the *cornu glandis*,” he proceeds, “ besides the *corpus spongiosum urethrae*, a numerous series of sensible nervous *papillae* contributes to
 “ the composition of the *glans*. These
 “ *papillae*, all the way from the *corona*
 “ *glandis*

“ *glandis* to the orifice of the urethra,
“ lie disposed in regular rows upon
“ the surface of the spongy fabric, and
“ constitute in such a manner the sub-
“ stance of the *glans* that the extre-
“ mities of these nerves, which are the
“ proper organs of pleasure and pain,
“ lie one upon another, and are braced
“ down by that very tender membrane
“ which covers the *glans*. Hence,
“ when the *glans* is bared of this very
“ external *involucrum*, the loosened dis-
“ engaged *papillæ* protrude outwards,
“ and the whole surface of this part
“ appears jaggy and villous. Again,
“ every one of these *papillæ* is wrapt
“ up separate from the rest in a subtile
“ cellular membrane. When there-
“ fore the venereal poison, after having
“ made its way through the thin ex-
“ ternal membrane of the *glans*, has
“ also destroyed the proper *involucra* of
“ these nerves, the *papillæ* are now
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“ laid bare. But then what an intolerable pain is raised! such an exquisite one, that there is scarce a more insupportable symptom attends the *venereal disease*. If then this slight cellular texture be destroyed by the acrid poison, the unconfined *papillæ* will begin to sprout, and form venereal warts. This dreadful symptom appears chiefly upon the *corona* of the *glans*, when the *papillæ* are most numerous. I have seen, with horror, the *glans* deformed, and become prickly like an hedge-hog, and the *præputium* almost quite deprived of motion by those dreadful excrescences.” This will, I think, sufficiently obviate ASTRUC’s remark upon this great Professor’s opinion.

ASTRUC deduces his second argument from the situation and form of venereal ulcers, which he affirms to be
seated

seated in the sebaceous vessels, with which in men the *glans* and its *corona*, the *prepuce* and its *frænum*, and in women the *cadurda*, *vulva*, *pterygia*, *clitoris*, and *ostium vaginae* are filled. Nor does he affirm this only of these parts which are chiefly troubled with venereal ulcers, but affirms the same must be understood of the venereal pustules which are seated in the sebaceous vessels or *lacunæ* spread all over the skin. We know that there are such *lacunæ*; which contain such an oleaginous humor as easily engages the venereal contagion, for which reason we easily see why pustules so often appear in the face. ASTRUC, however, cannot hence argue that these ulcers are seated only in the integument, and do not penetrate into the adipose or cellular membrane. But I was much surprized to read that “ from the orbicular form “ of the ulcers which exactly agree

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“ with the figure of the vessels, and
 “ from the non-appearance of a scar,
 “ or at least a very trifling one, it is
 “ evident that the cutaneous integu-
 “ ment was at most but superficially,
 “ yet by no means deeply corroded.”
 He then adds, that the same happens
 with respect to venereal ulcers spread
 over every other part of the body.
 Now I dare appeal to all who have
 had any practice in this disease, whe-
 ther they have not seen considerable
 scars?

ASTRUC begins his third argument
 as follows: *Neque suam indolem deponit*
virus venereum, dum inveterascit, &c.
 Here he palpably mistakes BOER-
 HAAVE's meaning — for, after he gives
 us the case of a young nobleman who
 had been most severely handled by this
 distemper, he says, “ so that, after the
 “ cure was perfected, the remaining
 “ scars gave a very odd prospect of
 “ deformity

“ deformity — from this case I became
“ acquainted with the singular genius
“ of this disease. Here I saw it in
“ the shape wherein it first discovered
“ itself in *Europe*, and agreeable to
“ the description given by the oldest
“ authors in this collection — I found
“ out the reason why, upon its first
“ appearance in *Europe*, it got the
“ name of the *Variolæ Hispanicæ* ;
“ but at the same time I was sensible
“ what a wide difference there is be-
“ twixt this disease, as it then ap-
“ peared, and that which at this day
“ is so familiar to all the *Europeans*.”

He seems to imagine BOERHAAVE
thought the venereal poison lost all its
force by long continuance in the body —
I am most perfectly assured that this could
never be his opinion, for he thoroughly
well knew that this noxious disease,
when once the body was infected with
it, gathered strength in its progress.

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BOERHAAVE only says the disease was more violent at its first appearance in *Europe*, and much milder in the present times; and that some symptoms occur now which did not appear formerly, &c. ASTRUC seems to have favoured this opinion; he asserts, however, that the humors which flow from the contaminated blood must necessarily be contaminated, not promiscuously and indiscriminately, but very regularly — from what has been said, it will appear sufficiently evident that the venereal poison may attack the body without affecting the genitals.

ASTRUC strangely contradicts himself when he says, that, the feet being affected, the contagion may spread far and near, though the subjacent muscles under the skin may remain sound and untainted —.

In short, he seems to have been sensible of the force of BOERHAAVE's arguments;

arguments ; but, as they did not agree with his favourite scheme of the scale of affinity, he endeavours to elude them —.

The lips, gums, palate, tongue, jaws, and nose are not covered with a thick skin, but with a mucous lining covered with nothing but the *epidermis* defending the numerous *papillæ* which come out of the mucous membrane.

If the *virus* should shew itself in this viscid, mucous, fat membrane, which is rolled up into a thousand folds and wrinkles, the difficulty of dislodging it will be but too apparent ; since this membrane is always exposed to the air — and we are therefore to immediately administer the most efficacious medicines. — This membrane covers the bones of the palate, nose, vomer, the ethmoides, the *ossa spongiosa*, *unguis*, the *os planum*, and *ossa orbitæ* ; it invests the *sinus maxillares*, the slender *apophysis*

of the *os sphenoides*, its *cryptæ* beneath the *sella turcica* and the cavities of the *os frontis*. If then this membrane be eaten away by a venereal ulcer, the bone underneath must necessarily corrupt, since it is thin and lamellated; nor shall we, with our utmost skill, be enabled to prevent the spreading of the *caries*, even to the very futures; so that, the whole being strongly affected, it will of course fall into pieces. — BOERHAAVE therefore very justly observes,

“ Let such as would not willingly boast
 “ what it is not in the power of art
 “ to perform be very sparing of their
 “ promises, when they see a plentiful
 “ discharge from the nose of a nasty,
 “ putrid, rancid *ichor*, or the back
 “ part of the *fauces*, the *velum pendu-*
 “ *lum palati*, the *tonsillæ*, or the thick
 “ membrane at the anterior part of
 “ the palate, wasting with ulcers that
 “ make the appearance of lard. But
 “ he

“ he who is diligent in the application
“ of all proper means, who neglects
“ nothing that can be done, who still,
“ when one remedy fails, has recourse
“ to another, who exerts his utmost
“ art to procure a favourable issue, while
“ at the same time he is very wary in
“ his *prognosis*; such a one, I say, ac-
“ quits himself to his patient, keeps
“ himself safe, and may laugh at those
“ loud boasters, who run themselves
“ aground by their vain promises.”

I have seen the *membrana postica pharyngis* so intirely destroyed by a venereal ulcer, that the *vertebræ* were exposed to sight in a most miserable state of rottenness.

That *lardaceous* colour, which is so conspicuous in venereal ulcers of the jaws and in the inside of the mouth, is a very sufficient diagnostic sign to those who have been in the least attentive in their practice in these venereal cases.

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cases. These venereal ulcers rather spread than penetrate, and so they move from place to place, and are attended with the most dreadful consequences.

The brain is often infected in an inveterate pox, from the slightest vertigo to a most mortal apoplexy. I have known the worst kinds of epilepsy, blindness, deafness, &c. to arise from the same cause. Gummy tumors and exostoses in the internal part of the *cranium* may come on, and, by pressing upon the brain, disturb its functions: the *diploe*, being eaten and corrupted, sometimes distils a most putrid humor, the *tabula vitrea* being corroded. I saw the whole *os bregmatis dextrum* consumed in this manner, and with an intolerable stench.

These obstinate pains of the head in the venereal disease are with great reason considered as a very symptom. BOTULLUS would fain have advised a
patient,

patient, who for some months had had very restless nights upon account of the most sharp and excruciating pains of the sciniput and temples, to have a caustic, in order to promote a discharge to the disorder which had corroded the bone. The patient could not be prevailed upon to give his consent: he soon began to lose his sight, perceiving, as it were, little flies and cobwebs playing before his eyes — the use of which he very soon after was deprived of — terrified at this, he consented to have a caustic applied, which was done accordingly on the fore part of his head, where the pain had been, and was acutest — but, as he would not agree to keep the ulcer open, it healed of itself, and left a scar — in about forty days after he died. — The *cranium* about the place where the sagittal suture ends in the coronal was sphacelated and putrefied for the breadth
of

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of a crown ; and, as soon as the cranium was laid open, a great quantity of a putrilaginous ichor ran out like water, resembling a mixture of foot and saffron — not only at the aperture made by the saw, but also at the ears and nostrils ; the membranes of the brain, towards the part where the bone was carious, were putrefied, and the brain and optic nerves corrupted, while all the other viscera were found —. FALLOPIUS, who was an excellent anatomist, and whose authority may be well depended upon, asserts, in contradiction to many who were of opinion that the liver was affected, and was consequently the seat of the disorder, that he had opened above fifty persons in one year who had the *Venereal Disease*, but that he never found the liver injured in any shape whatever. — However, although the liver may not be considered as the original seat of the

the distemper, or that the contagion is first received in that viscus, we have notwithstanding found it as well as many other internal viscera affected by it. — SEVERINUS, in an hospital abounding with venereal patients, dissected many, and found numbers whose *œsophagus*, *trachea*, lungs, liver, &c. were all affected by the disease.

It is of the utmost consequence to distinguish venereal ulcers from others, as they require a very different management.

If the contagion penetrate into the cellules of the *membrana adiposa*, and mingle with the fat there, it corrupts this tenacious oil by its malignity, and is farther retained by this viscid and oleaginous lentor, and, by its heat and motion, becomes more and more inflamed, eats into, and corrupts, the skin and cuticle, and at the same time contaminates the circumjacent oily cellules.

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lules. Hence we always find a larger part of the *panniculus adiposus* corrupted than what it is upon the superincumbent skin.

The matter which is discharged from such an ulcer is so different from that which comes out from other abscesses, that it may be easily distinguished by those who are thoroughly conversant in these matters from the *ichor*, *sanies*, *pus*, or *lymph* of cancerous sores —. This *venereal* matter shines like half-melted sweat, is little tenacious; is of a remarkable dirty white colour bordering upon green; is scarcely sharp, hot, painful or corroding, and only corrupts this membrane without any great degree of pain.

The lips of these ulcers, in those parts which are covered with skin, are never dry or puffy, but are shrivelled, and as smooth as if they were polished, pale, and flabby, especially when the *panniculus*

culus adiposus is destroyed from under them, which it generally is more than the incumbent skin.

Such ulcers happen when *buboes* have been laid open — GOULARD has described them, and observes that they are not deep, but sordid; and that the matter which comes from them is not very corroding, but of a mucous consistence. He at the same time remarks that the first appearance of a scar may be seen at the bottom of an ulcer about the middle, in the shape of a thin red pellicle which spreads from the center to the circumference; whereas in ulcers which are not venereal the scar rises from the circumference and extends to the center. The redness seems to be owing to the subjacent muscles (the whole membrane being intirely destroyed) which appear through the transparent pellicle. The scar of a venereal ulcer could scarcely begin from

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from the circumference, because the cellular membrane beneath the skin is destroyed, though the skin itself may be very little injured, or may, perhaps, be still intire —.

In these parts which the venereal contagion immediately attacks, or upon which it is by *metastasis* deposited, a spot may be observed, which at first is flat, resembling a pock on its appearance, or the bite of a flea; this is attended with a slight itching, very little painful, after which it rises to a pimple. ASTRUC has described these venereal ulcers under this very form: “ At first
 “ there arises a small, miliary, red,
 “ pointed, hot, itching, pimple, the
 “ top of which, by degrees, grows
 “ whiter and more even, and at last
 “ opens with a small aperture, from
 “ whence a small quantity of ichor is
 “ discharged. The erosion of the lips
 “ continuing, the ulcer increases, is
 “ dilated,

“ dilated, and forms a small cavity;
“ it is surrounded with callosities,
“ more or less hard and thick; it
“ abounds with a thick, viscid, tena-
“ cious *pus*, and produces ulcers of
“ the same kind in the neighbouring
“ parts.”

These chancres are not easily curable by the common methods; their lips are callous, and their bottoms are covered with a quantity of a whitish or livid mucus. — I have sometimes observed it change from a yellow to a greenish colour; this may, perhaps be occasioned by the admission of a little blood from a small corroded vessel. These ulcers moreover may be very easily distinguished from excoriations and other slight disorders of these parts, because these last are healed with the most common applications, nay, they often heal spontaneously —.

It is well deserving of our attention towards being well informed whether the ulcers arise from a newly admitted infection by impure coition, or from a *pox* that has been long latent — for here the cure will require more care and trouble — “ But if the patients, “ in order to conceal their guilt, “ should chuse rather to ascribe the “ cause of their disorder to some old “ injury received long ago than to a “ fresh infection, which might throw “ a slur upon their character, as is “ commonly the case with widows, “ nay, sometimes with men who “ have made a vow of chastity — “ yet in this case the truth (says “ ASTRUC) may be strongly conjectured. — If ulcers occupy the “ *frænum* in men; the *carunculæ* “ *myrtiformes*, *nymphæ*, and *clitoris* in “ women; if they are in great numbers and malignant, if they make “ a quick

“ a quick progress, it is probable
“ from hence, that they have been
“ contracted by a fresh infection;
“ since those that arise from a latent
“ *pox* do not more particularly affect
“ the *frænum* or *caruncles* of the
“ *vagina* than the other parts of the
“ *pudendum*; they are few, distinct,
“ generally mild, and for the most
“ part very slow in their progress.”

But there is a considerable difference between the venereal ulcers which occupy such parts as are covered with skin, and those which are deprived of that covering — and this is true with respect to the *penis*. These ulcers frequently attack the *glans*, the *corona glandis*, and occasion many more mischiefs there than they do in any other parts — so, for example, when the very fine *epithelium* which covers the *glans* and the internal surface of the prepuce is corroded, the

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nervous *papillæ*, which in these parts are very numerous, spring up and become *verruca* — very different will the ulcer be, should it, as it frequently does, attack the *frænum* of the prepuce, than when it appears on the external surface of the skin which covers the *penis*. When these ulcers corrode the internal surface of the prepuce, they often occasion pellucid and wonderfully inflated tumors; hence *phymosis*, *paraphymosis*, inflammation, suffocation, and mortification of the *penis* —.

Although ASTRUC allows that all the *genitals* may be alike exposed to the same danger, he, nevertheless, affirms that they are not all in an equal degree injured — and this seems to be highly probable. — He denies, however, that these ulcers or venereal chancres are ever seated in the external surface of the prepuce, or of any other

other part of the skin which covers the *penis*; and asserts, at the same time, that they also occupy the inward parts of the *vagina* and *vulva*, but the external never. — I have, notwithstanding, frequently seen these ulcers on the external skin of the *penis*, as well as on the external parts of the *pudenda* in women — and I dare say the like has been observed by many gentlemen who are conversant in venereal practice.

The *gonorrhœa simplex* differs greatly from the *venereal gonorrhœa*, as the former may be occasioned by making too free with malt liquors, by too violent riding on horseback, by immoderate, though pure, venery, or by a clyster too hotly administered. I have seen the like effects produced by the use of sharp diuretics, and even by the outward application of *cantharides*, &c. — but they have gone off of themselves,

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or have been very easily cured — this cannot be said in any manner of the *gonorrhœa venerea*. In the simple *gonorrhœa* the parts, especially in such as have frequent and involuntary emissions, are quite debilitated and enervated — in the *venereal gonorrhœa*, on the contrary, they have such frequent erections as greatly retard the cure.

It is very certain that the *gonorrhœa venerea* was not known, when the *Lues Venerea* first appeared in *Europe*. *Anthony Musa Barasavolus* says it was first known in the year 1551 — *ASTRUC* however found a description of this disease in a book written by *JAMES BETHENCOURT*, and printed at *Paris* in the year 1527; but the exact time cannot be well ascertained with any precision; and it might probably have been observed in different countries at different periods of time. The structure of the veins of the
penis

penis are peculiarly adapted for a ready and easy resorption. For RUYSCH has demonstrated that almost all the veins are pierced with large and visible pores or foramina like a sieve — in another part of his writings he says he plainly saw the rapid motion of the blood through the *penis*, in a man who had a small artery eroded by an ulcer between the *glans* and the prepuce; the hæmorrhage was so violent as scarcely to yield to the many styptics which were applied — he brought the prepuce over the *glans*, and pressed it hard down with his fingers, and in that manner stopped the bleeding, and prevented the danger it threatened. A *gonorrhœa*, says BOERHAAVE, “ proceeds from
“ the infecting matter imbibed by
“ the dilated pores of the *glans*, in
“ that instant of time when this part
“ first begins to subside from its
B b 4 “ turgid

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“ turgid state in the venereal pa-
“ roxysm. In this case the conta-
“ gious poison takes its place in the
“ cells of the *corpus spongiosum* of the
“ glans, which is wrapt up in its
“ membranes, and continued all the
“ way to the neck of the bladder.
“ From this continuation of its struc-
“ ture it is that the slightest contagion
“ is easily propagated through all this
“ tract; and when once the poison
“ has made its way into the *membrana*
“ *cellulosa*, which is here extremely
“ tender, it immediately produces a
“ small ulcer, attended with a whitish
“ yellowish discharge of the con-
“ sistence of new cream, like it
“ almost void of tenacity or ro-
“ piness, and which, when it dries
“ upon the stiffened linen, appears
“ of a colour between green and
“ yellow, — This filthy pus, feed-
“ ing upon the fine fattish tex-
“ ture

“ ture of the part, digs out by de-
“ grees an ample cavern in which it
“ is prepared, accumulated, retained,
“ and from which it makes a flow,
“ drilling, spontaneous exit, or is
“ pressed out in considerable quan-
“ ties. If this cavity is confined
“ within the fungous texture of the
“ *glans*, and, through its surface, has
“ formed outlets for itself, a very
“ filthy pus oozes out, by which both
“ the *glans* and prepuce are cor-
“ rupted, and sometimes consumed
“ and mortified.” This is the first
species of a virulent *gonorrhœa*. “ It
“ is known by a sordid moisture of
“ a less thick consistence than what
“ is produced in the other kinds of
“ this disease, continually prepared
“ within the structure of the *glans*
“ and prepuce, and when the *glans*
“ is squeezed, sweating out upon its
“ surface. After the contagion is
“ removed,

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“removed, this kind of *gonorrhœa* is easily cured.” Sometimes a red spot appears on the surface of the *glans*, and this is the first symptom of the received contagion; this sometimes goes off quickly, and is succeeded by a running through the very substance of the *glans* itself; this venereal stigma or mark first forms itself into an ulcer, and then proceeds to the fungous substance of the *glans*. When such an ulcer is either in the internal part of the prepuce, or in the *glans*, it discharges a large quantity of matter, such as issues from the *glans* when pressed, when its cellular substance becomes infected —.

When the matter flows out of the substance of the *glans*, and nothing from the *urethra*, it is called a spurious *gonorrhœa*, to distinguish it from the others. *MASSON*, a celebrated physician at *Montpelier*, had three patients
in

in a very particular manner affected — the venereal matter ran from the glands, which incircle the *corona glandis*; he cured them by the same means as the other *gonorrhœa*; the like was observed by *Barbeyrac* and other gentlemen of the profession.

As the venereal poison is very easily intangled in the mucous, clammy, fat humors, such as are secreted by these glands, it is very probable, that these glands are infected; nay, they seem perfectly well calculated to fix the received contagion, and to produce the venereal ulcers, which I have frequently seen the whole of the *corona glandis* covered with. We cannot, however, determine these affected glands to be the original cause of the spurious *gonorrhœa* with any certainty. — *SYDENHAM* says, “ I have seen such
“ virulent matter ooze from the porous substance of the *glans*, and
“ not discharged from the *urethra*;
“ and

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“ and there has been no ulcer either
 “ in the prepuce or *glans*. I have
 “ frequently seen drops of the vene-
 “ real poison issue through the sub-
 “ stance of the *glans* upon my pres-
 “ sing it, although I could observe
 “ no signs of the disorder in the
 “ prepuce, or in that part of the
 “ *corona glandis* where these glands
 “ are found —.

“ It makes another kind of *gonor-*
 “ *rhœa*, when the venereal poison, af-
 “ ter having insinuated itself through
 “ the pores of the *glans*, has pene-
 “ trated into that cellular substance
 “ which is applied round the upper
 “ part of the *urethra*, so as to form
 “ a small ulcer there; which, through
 “ passages that it has eat into the
 “ *urethra*, pours its pus into that
 “ canal, out of whose canal it is
 “ perpetually trickling, but in great-
 “ est plenty when the *penis* is pressed

“ at

“ at this part, and the pressure conti-
“ nued forward from its root. What
“ is here most remarkable is, that if
“ after the patient awakes in the
“ morning, and before he has emptied
“ his bladder, a pressure begun an inch
“ behind the *apex* of the *penis* be
“ continued forwards, a considerable
“ quantity of *pus* may be discharged ;
“ which method of compression, and
“ manner of discharge, considered, it
“ appears that this *pus* did not come
“ immediately from the canal of the
“ *urethra*, but that it had been first
“ squeezed out of its fungous sub-
“ stance into its cavity ; and in this
“ species of *gonorrhœa*, if you be-
“ gin from the neck of the bladder,
“ and press all the way to the *glans*,
“ you will not be able to squeeze out
“ the least drop of that kind of
“ matter from beyond this part.
“ This therefore is the only affected
“ part,

“ part, and hither must all your
 “ efforts be directed. This is the
 “ shape in which the *gonorrhoea* most
 “ commonly appears at first, and this
 “ species of disease occurs every day.
 “ For the most part it produces a
 “ quantity of venereal *pus*, continues
 “ a long time in people of lax habits,
 “ and yet, if the purulent matter
 “ has a free exit, it seldom occasions
 “ a pox; so far from that, it rather
 “ prevents it — but it is principally
 “ attended with this misfortune, that,
 “ when it has continued a long time
 “ in the sinuous meanders of the
 “ cellular membrane, it is subject to
 “ produce tedious gleans, which all
 “ the art of the world cannot cure
 “ or dry up without the utmost dif-
 “ ficulty.”

The channel of the *urethra* has
 many large and small orifices; the
 venereal infection can easily commu-
 nicate itself to them, and so produce

a *gonor-*

a *gonorrhœa* — this disease is occasioned by the acrimony or larger quantity of venereal matter of the venereal poison, by an eager and repeated coition, by former *gonorrhœas*, by venery while the patient has the disease upon him, by the heat of the air; by dancing, but in a more especial manner by riding; by all these the *Venereal Disease* becomes more active as well as noxious —.

||| The patients feel a troublesome pain in the *penis*, as if the *urethra* were contracted; it runs a good deal, but slowly, as the *urethra* is so much the more contracted, by how much more the many of these little partitions are affected. By pressing about the lower part of the *penis* the matter may be brought forwards towards the *glans*; which cannot be done, when the disorder is situated in the upper part of the *urethra* near the *glans*. A white matter comes away, which, when it dries, becomes yellowish,

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lowish, and stiffens the linen; if the disorder be of a more malignant nature, the matter becomes green; it is worst of all when it is murky, sanious, and bloody; for this denotes that the cavernous body of the *urethra* is eaten through, and that there will be great difficulty in the cure; and this generally happens to those who are troubled with frequent erections, at the time when they have a *gonorrhæa* upon them. In like manner will the colour of the matter change, as the disorder grows better; the murky, sanious, and bloody running will become green, then yellow, next white, and less copious. It has often been observed that a *gonorrhæa*, when it does not appear for some time after the infection has been received, will be much the worse: in this case a troublesome stricture of the *penis* will be felt, which will not only occasion a pain,

pain, but a sensible obstruction in making water; I have known this to happen two or three days after the venereal infection, and sometimes not till fourteen days after, and later.

The material cause of a *gonorrhœa* seems to be a humor which naturally oozes from the *lacunæ* of the *urethra*, lubricating and softening its internal substance: in sound people this humor is but small in quantity, but, when it is intermixed with the venereal infection, it increases, and acquires corroding acrimony — if this increased secretion, by the stimulus of the contagion, can carry off the virus so that it may not adhere to the parts and corrode them, the disease may be removed without danger of ulceration; but, should the virus be more acrid and more copious, or remain longer in the parts, before the disease shews itself,

an ulceration and erosion will then be much expected —.

The very accurate and ingenious Mr. SHARP, observes that “the venereal poison in its first operation irritates only, and, by that irritation, brings on an increase of secretion, which happens to the glands of the intestines from purgatives, to the salivary glands from smoking, and indeed to every other secretory organ of the body from irritation.” MORGAGNI, who dissected perhaps a greater number of the human *urethrae* than any other anatomist whatever, declares that he seldom or ever observed those disorders in the *urethra* which generally attend the venereal *gonorrhœa*; for the running at first is not purulent, nor is the pain so great as to suspect an erosion; nor does any, no, not the least, drop of blood appear — this seems to confirm the opinion, that this flux, in the beginning at least,

least, proceeds from an increase of the natural mucus, which serves to lubricate the cavity of the *urethra*: he confesses, however, very candidly, that he had frequently seen the marks of a former erosion of the *urethra*; such as an abolition of the mucus, *lacunæ*, scars in the *urethra*, a contraction of that part, and an excrescence of proud flesh in these very *lacunæ*.

Since, then, it appears that the marks of ulcers, after *gonorrhæas* sometimes have, and at other times have not been discernible, the different opinions broached by different writers will therefore very easily be reconciled.

“ The third kind of *gonorrhæa* (as
“ BOERHAAVE remarks) happens when
“ the contagious particles have entered
“ and taken possession of the *glandulæ*
“ COWPERIANÆ *urethræ*, so that the
“ pus discharges itself by their excre-
“ tory ducts into the urinary duct.

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“ Here the disease works out vast,
“ hollow, fistulous sinuses, which flow
“ with large quantities of matter, and
“ are very difficult to discharge, and
“ consequently to heal. If the dis-
“ charge of this ichor so produced is by
“ any means obstructed, it sometimes
“ forms very malignant ulcers about
“ the sides of the *urethra*, where these
“ glands, according to the description
“ of their noble discoverer, are situated.
“ Hence proceed very obstinate ulcers,
“ which give a great deal of trouble
“ to both the physician and patient,
“ and frequently continue for some
“ years. What renders the cure so
“ insuperably difficult in this case is,
“ that, when once the contagious mat-
“ ter has made its way into the *folliculi*
“ of those glands, it can scarce be
“ expelled, but there it lies in spite of
“ all that can be done to discharge it:
“ by stagnation it becomes every day
“ more

“ more and more virulent, and spreads
“ the infection through the neighbour-
“ ing parts; insomuch that sometimes
“ the subcutaneous pinguedinous cells
“ towards the root of the *penis* are af-
“ fected by it; and what miserable ef-
“ fects this may, and in fact sometimes
“ does produce, every knowing practi-
“ tioner can tell.”

This disorder is frequently derived from the first and second species of *gonorrhœa*, especially if the patient has often had the disorder, otherwise it seldom occurs; LITTRE but once had an opportunity of seeing these glands only affected.

This species of *gonorrhœa* is known by a tumor and pain in the middle of the *perinæum*, which extends itself even to the very *anus*; nor is the running from the *penis* very considerable; and they scarce feel any heat in the urine, especially if there be no ulceration near the excretory ducts. Sometimes, in-

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deed, when the urine is nearly discharged, a quantity of corrupt, ichorous, fetid matter will come from the *penis*, as it will upon pressing the tumor in *perinæo*; because the matter collected in these glands is there retained, in consequence of their oblique position.

It must be observed that the swelling of these glands and the parts adjacent, as it becomes larger, will so compress the excretory ducts as to admit very little or no matter into the cavity of the urethra — This disorder is called a dry virulent *gonorrhœa*, or a dry venereal *dysuria*; which ASTRUC affirmed to be either a forerunner of very virulent *gonorrhœas*, or disappears in consequence of a virulent *gonorrhœa* too suddenly suppressed; he therefore divides them into two different species; the first from a *phlegmon* or inflammation of the *prostatæ* or seminary vessels; the second from an erysipilatous phlogosis

gosis of the urethra. The first species is indicated by a tumor, heat, redness, and pain of the perinæum — but no notice is taken of COWPER'S glands being at the same time affected; which is the more remarkable, since in another place he says “ but it is found by experience, that the *gonorrhœa*, which “ is seated in the seminary vesicles or “ prostates, very rarely degenerates “ into an abscess; either because they, “ being larger and of a more firm texture give greater resistance to a laceration, without which there seldom “ happens a suppuration; or, because “ of the number, width, and shortness of their excretory ducts which “ open into the urethra, there is a “ free passage afforded to the putrid “ stagnated *semen*, for which reason “ its corrosive quality acts with less “ violence upon the cells in which it “ is confined; on the other hand the

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“ *gonorrhœa* in which COWPER’S glands
 “ are affected, for the contrary reason
 “ frequently forms an abscess, either
 “ because, being of a smaller size and
 “ softer texture, they are the more
 “ easily injured, or because the *semen*
 “ that is collected in them, as it is
 “ sent into the *urethra* through a long,
 “ oblique, narrow duct, remains the
 “ longer in these receptacles, and there-
 “ fore is the more liable to destroy their
 “ texture.”

“ Besides these (says BOERHAAVE)
 “ there is a fourth *gonorrhœa* which
 “ differs from the rest: for, after the
 “ virulent matter has, by the passages al-
 “ ready described, reached the *prostatæ*,
 “ it wastes their substance, and melts it
 “ down into a very plentiful mass of
 “ virulent pus. This disease some-
 “ times takes its rise from other *gonor-*
 “ *rhœas* long continued, but principally
 “ from often repeated ones. It dis-
 “ covers

“ covers itself by tumors upon the
“ *perinæum*; sometimes too the parts
“ all around the region of the *prostatæ*
“ are most miserably ulcerated, by
“ which means the neighbouring parts
“ are destroyed, and become a very
“ shocking spectacle.

“ But one of the most common
“ symptoms of this disease is, that
“ frequently those miserable patients,
“ all at once, and without any mani-
“ fest cause, are seized with a suppres-
“ sion of urine; whence they are
“ tortured with a great many painful
“ and fruitless attempts to make water;
“ while at the same time there is no
“ admission of the catheter to relieve
“ them that way: at last, after a long
“ torment, some quantity of pus on a
“ sudden makes its way out of the
“ orifice of the urethra, a little after
“ which the urine is discharged with-
“ out difficulty, till the same mischief
“ returns

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“ returns again. I have sometimes
“ seen this disease, and you cannot but
“ be sensible what a hard matter it is
“ to accomplish a cure. Here saliya-
“ tion takes place, and here all the
“ remedies recommended against the
“ aforementioned kind of *gonorrhœa* must
“ be very diligently applied.

“ The last and most abominable
“ species of this disease happens, when,
“ from the already mentioned affection
“ of the *prostatæ*, the emissaries of
“ the *vesiculæ seminales*, described by
“ MORGAGNI, gaping with open
“ mouths among the ducts of the
“ *prostratæ* are eroded. Whence the
“ venereal poison, admitted by these
“ emissaries into the seminal reservoirs,
“ corrupts their vessels, and contained
“ liquids, with its virulence, occasions
“ a very copious discharge of most
“ filthy matter, and ulcerates those
“ sinuous parts intorted into a great
“ many

“ many winding labyrinths. Hence
“ what enormous mischiefs ensue ! I
“ have seen that whole cellular appa-
“ ratus, which invests, and separates
“ from one another, the *vesiculæ se-*
“ *minales*, the urinary bladder, the
“ *rectum* and *perinæum* ulcerated, pu-
“ trefied, and corroded into fistulous
“ caverns, reaching as far as the *scro-*
“ *tum*, the *anus*, and the *perinæum* ;
“ so that these parts were intirely de-
“ stroyed by the mining corruption,
“ whilst, in the mean time there was
“ no benefit received from the use of
“ the baths, fomentations or injections,
“ nor from the application of plasters,
“ ointments, or cataplasms, nor from
“ making incisions into the sinuses, or
“ dilating their orifices. In spite of
“ all these means, I have known the
“ disease to proceed till the very urine
“ was discharged by those ulcers.”

There

There is yet another symptom which is observed in a *gonorrhæa* which merits the closest attention, to wit, a venereal *ophthalmia*, which, without immediate care, will end in an incurable blindness.

— ERNDTELIUS says he has frequently met with this complaint in his practice. — When the venereal patients use balsams and such strong astringent medicines as may check the disease, a sudden translation of the venereal virus falls upon the eyes; the whole bulb of which becomes highly inflamed, and an excrescence is found all about the transparent *cornea*, which, unless it be quickly removed by a skilful operation, suppurates, and by perforating the very *cornea* itself, the humors within being already disturbed and infected, brings on a total effusion: “ in this case we
“ may observe a matter much resem-
“ bling that of a *gonorrhæa* to issue
“ from the small wound — which is
“ not

“ not to be cured by bleeding, purg-
“ ing, mercurials, or any other boasted
“ *panaceas* whatsoever.” And this will
not at all seem, surprising if we recol-
lect that the venereal miasma is able to
corrode the hardest parts of the body.

It is plain that the re-absorbed mat-
ter of a *gonorrhœa* may be deposited
on other parts of the body because an
universal pox may happen sometimes in
consequence of bad treatment — some-
times the re-absorbed virus will lodge
upon some particular parts of the body,
before it spreads over all; thus we see
that buboes and swelled testicles will be
brought on by the use of astringent in-
jections; these parts indeed are in the
neighbourhood of the place first af-
fected — and STORCK has remarked that
“ a *gonorrhœa* suppressed by astringents
“ caused an inflammation of the navel,
“ from which there was a running
“ of a matter similar to that which
“ was

" was discharged through the ure-
 " thra."

ASTRUC observes such translations :

" indeed it appears from experience,
 " that the gonorrhœal *ophthalmia* suc-
 " ceeds a suppressed gonorrhœa in those
 " persons only whose eyes are natu-
 " rally weak and tender, or who have
 " had them hurt by a blow, friction,
 " or some extraneous body getting
 " into them, &c."—

It is not however improbable but
 that a venereal *ophthalmia* may arise in
 consequence of the infection imme-
 diately applied to the eyes, and not
 from a metastasis. Persons who have
 a gonorrhœa, it is frequently observed,
 will, in the day-time, be constantly
 pressing the matter collected in the
urethra and coming from the *penis*,
 that by examining its quality, colour,
 thickness, quantity, &c. they may
 form a judgment of the cure or state
 of

of the disease, though they are advised not to do so, that the affected part may not be inflamed and irritated. They are little anxious, after all this, to wash their hands; and, should they by any accident or other means rub the eyes with their fingers, or pick their nose with them, they run the risque of bringing on a venereal *ophthalmia* or *oxæna*.

ASTRUC says that an *ophthalmia* caused by any such means is less dangerous, provided the *gonorrhœa* inwardly proceeds properly; but, if it be suddenly checked, the consequences would be terrible, because the venereal virus in that case rushes towards the eyes with great impetuosity and in a large quantity —.

THE END.

of the disease, though they are advised
not to do so, that the infected part
may not be inflamed and irritated.

They are little anxious, after all this,
to wash their hands, and should be

by any accident or other means rub the
eyes with their fingers, or pick their

nose with their fingers, they run the risk
of bringing on a venereal complaint or

Astruc says that an ophthalmia
is produced by any thing that is in the eye.

It is a very common complaint, and is
produced by any thing that is in the eye.

It is a very common complaint, and is
produced by any thing that is in the eye.

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produced by any thing that is in the eye.

I N D E X

TO THE

THIRD VOLUME.

A^{**A**}**BDOMEN**, a vapour, of an urinous smell, exhaling from that of a living animal laid open, contains the elements of a stone, Pages 213, 219.

Abdominal ring, a rupture of the bladder how occasioned thereby, 288.

Abscess, the thorn comes away with the pus, upon the breaking thereof, 246.

Abstinence, total, from animal food, necessary to people violently afflicted with the stone and gout, 229.

Academics, a fever peculiar to, 177.

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D d

Air₂

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- Air*, fixed, greatly contributes to cohesion, 306 —
 one half of a *calculus* is air, 304. — expelled by
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- Aleppo*, plague at, abated when the weather was
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- Aliment*, three kinds thereof, support human bodies,
 164.
- ALSTON, 312.
- Altdorf*, wherein an acute continued fever raged in
 1711, 177.
- AMATUS LUSITANUS, 60.
- Amber*, proper to fumigate the linen of persons
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- AMBROSE PARE, See PARE.
- Americans*, by the clearing away of the woods,
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- Analysis*, chymical, of the stone, 231.
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- Animal food*, putrefies much sooner than vege-
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- Animalcules* in the air, not the cause of pestilential
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- ANTHONY MUSA BARASOVOLUS. See BARASA-
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- Antiphlogistic purges*. See *Purges*.
- Antiseptics*, very palatable, 135.
- Aorta*, a stone adhering to a branch thereof,
 217.
- ARETÆUS, 212, 271, 284, 297, 299, 300, 302.
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Arterial calculus, an uncommon sort of stone, 217.

Artery, small, eroded by an ulcer between the *glans* and the prepuce, 375. — *Ruysch* cured one afflicted with that disorder, *ib.*

Aspera arteria, a stone found in the angle of the bifurcation thereof, 214.

Astringents, when useful in the *Small-Pox*, 81.

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